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Big Thorne Project
Thorne Bay Ranger District, Tongass National Forest

Draft Environmental Impact Statement

Volume II

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Chapter 4
References and Lists

List of Preparers

This chapter identifies the preparers and major contributors/reviewers for this EIS and summarizes their education and experience levels.

Preparers:

Randy Fairbanks, IDT Leader/Tetra Tech Project Manager
Education: M.S. Forest Science/Biometrics, University of Washington, 1979
B.S. Wildlife Science, University of Washington, 1972
Professional Experience: 38 years (including 22 years working on Forest Service projects)

Cliff Barnhart, Forester/Logging & Transportation Planner
Education: B.S. Forest Engineering, Oregon State University, 1987
Professional Experience: 25 years (including 20 years working on Forest Service projects)

David Cox, Geologist/Hydrologist
Education: B.S. Geology, Western Washington University, 2000
Professional Experience: 11 years (including 4 years with the Forest Service)

John Crookston, Ecologist
Education: M.S. Ecology, San Diego State University, 2007
B.S. Biology, University of California San Diego, 2002
Professional Experience: 9 years

Matt Dadswell, Social Scientist
Education: Ph.D. studies, Geography, University of Washington
M.A. Geography, University of Cincinnati, 1990
B.A. Economics and Geography, Portsmouth Polytechnic, 1988
Professional Experience: 20 years

Robert Evans, Landscape Architect
Education: M.S. Landscape Architecture, Auburn University, 2006
M.S. Regional Planning, Auburn University, 2006
B.S. Environmental Design, Auburn University, 2003
Professional Experience: 6 years

Jennifer Hawkins, Environmental Scientist
Education: B.S. Environmental Science, Marist College, 1994
Professional Experience: 16 years

Dylan Hitner, Forest Engineer, EI, LSI
Education: B.S. Forest Engineering, Oregon State University, 2011
Professional Experience: 2 years

Joe Iozzi, Silviculturist
Education: Silviculture Institute, University of Washington, 1985
B.S. Forest Management, Rutgers University, 1977
Professional Experience: 32 years (including 19 years with the Forest Service)

Chris James, Hydrologist
Education: M.S. Forest Hydrology, University of Washington, 2007
Graduate studies in Environmental Management and Engineering, Portland State University
B.A. Environmental Resources (Chemistry minor), Lewis and Clark College, 1999
Professional Experience: 7 years (including 2 years with the Forest Service and BLM)

Johanna Kovarik, Geologist
Education: M.S., Western Kentucky University 2007
B.A., Western Michigan University, 2004
Professional Experience: 7 years with the Forest Service

John Knutzen, Fish Biologist
Education: M.S. Fisheries, University of Washington, 1977
B.A. Biology, Western Washington State College, 1972
Professional Experience: 34 years

Timothy Marshall, Archaeologist
Education: M.A. Archaeology, East Carolina University, 2000
Professional Experience: 11 years (including 4 years with the Forest Service)

Teresa Opolka, Ecologist
Education: B.S. Biology, Seattle University, 1998
Professional Experience: 13 years

MaryJo Watson, GIS Coordinator/Analyst
Education: B.S. Computer Information Systems, Menlo College
Professional Experience: 19 years

Brita Woeck, Wildlife Biologist
Education: M.S. Wildlife Ecology and Management, University of Missouri, 2003
B.S. Wildlife Science, University of Washington, 1999
Professional Experience: 12 years

Major Contributors/Reviewers:

Kent Nicholson, District Ranger
Education: M.A. Business Administration (with honors), University of Alaska, 2007
B.A. Business Administration, University of Alaska, 1996
Forest Experience: 8 years (27 years in timber in Southeast Alaska)

Jason C. Anderson, District Ranger
Education: B.A. Biological Sciences, California State University - Stanislaus, 1997
Forest Service experience: 7 years

James Kelly, Program Planning Specialist, Team Leader
Education: Northern Essex Community College, Southern Oregon University
Forest Service experience: 15 years

Delilah Brigham, Fish Biologist
Education: B.S. Aquatic Resources, Sheldon Jackson College 1996
Forest Service experience: 9 years

Sally Burch, GIS Coordinator
Forest Service experience: 20 years
Other professional experience: 3 years

Marla Dillman, Wildlife Biologist
Education: B.S., Wildlife Ecology, University of Wisconsin-Madison, 1984
Forest Service experience: 25 years

Victoria Houser, Recreation Planner
Education: B.S., St. Lawrence University 2000, Masters State University of New York - Environmental Science and Forestry 2005
Forest Service experience: 6 years

Richard Jacobson, Civil Engineering Technician
Education: Oregon State University, Forest Engineering Institute 1994
Forest Service experience: 17 years

Kristen Lease, Forester, Ecologist
Education: B.S. Forest Resource Management, University of Minnesota, Twin Cities, 2003
Forest Service experience: 7 years

Frank W. Roberts, Planning Staff
Education: B.S., Forestry, Michigan Technological University, 1976
Forest Service experience: 30 years

Becki Saari, Soils Technician
Education: Completing B.S. in Soil Science and Land Resources with the University of Idaho
Forest Service experience: 6 years

Robert "Mike" Sheets, Certified Silviculturist
Education: Graduate of the Natural Resource Institute 1999-2000, University of West Virginia, BS in Forest Resource Management 1992, Dabney S. Lancaster College, AS in Forestry 1987
Forest Service experience: 17 years

Julianne Thompson: Forest Hydrologist
Education: B.S. Natural Resources Management, California Polytechnic State University, 1985
Graduate studies in Wildland Hydrology, Colorado State University 1985-1988
Forest Service experience: 20 years

4 References and Lists
Distribution List

A copy of the Big Thorne Project Draft EIS or a letter with a link to the online copy was sent to the following parties. These parties either commented on the project, requested a copy of the DEIS during scoping or at some other time during the NEPA process, or are part of the Tongass National Forest mandatory mailing list (Forest Service Handbook 1909.15, Sections 23.2 and 63.1).

Agencies

Alaska Board of Fisheries, Ketchikan, AK
Alaska Dept. of Environmental Conservation, Division of Air and Water Quality, Juneau, AK
Alaska Dept. of Fish & Game, Division of Sport Fishing, Ketchikan, AK
Alaska Dept. of Fish & Game, Division of Subsistence, Douglas, AK
Alaska Dept. of Fish & Game, Division of Wildlife Conservation, Douglas, AK
Alaska Dept. of Fish & Game, Division of Habitat, Craig, AK
Alaska Dept. of Fish & Game, Division of Habitat, Douglas, AK
Alaska Dept. of Natural Resources, Division of Coastal and Ocean Mgmt, Juneau, AK
Alaska Dept. of Natural Resources, Division of Forestry, Ketchikan, AK
Alaska Dept. of Transportation, Juneau, AK
Alaska Dept. of Transportation, Craig, AK
Alaska Div. of Governmental Coordination, Juneau, AK
Alaska Land Use Council, Office of the Governor, Juneau, AK
Alaska Office of the Governor, Juneau, AK
Environmental Protection Agency, Alaska Operations Office, Anchorage, AK
Environmental Protection Agency, EIS Filing Section, Washington, DC
Environmental Protection Agency, Region 10, Seattle, WA
Federal Aviation Administration (USDOT), Anchorage, AK
Federal Railroad Administration (USDOT), Washington, DC
Interstate Commerce Commission, Washington, DC
National Marine Fisheries Service, Habitat Conservation Div., Juneau, AK
National Marine Fisheries Service, Protected Resources Mgmt. Div., Juneau, AK
NOAA Office of Policy and Strategic Planning, Washington, DC
National Park Service, Anchorage, AK
Small Business Administration, Seattle, WA
U.S. Army Corps of Engineers, Regulatory Field Office, Juneau, AK
U.S. Army Corps of Engineers, Northwestern Division, Portland, OR
U.S. Army Corps of Engineers, Pacific Ocean Division, Ft. Shafter, HI
U.S. Army Engineer District, Anchorage, AK
U.S. Advisory Council on Historic Preservation, Washington, DC
U.S. Coast Guard, Environmental Impact Branch, Washington, DC
U.S. Dept. of Commerce, Policy and Strategic Planning Office, Washington, DC
U.S. Dept. of Energy, Office of NEPA Policy & Compliance, Washington, DC
USDA APHIS PPD/EAD, Riverdale, MD
USDA Natural Resources Conservation Service, Craig, AK
USDA Natural Resources Conservation Service, Juneau, AK
USDA Natural Resources Conservation Service, Kenai, AK

USDA Natural Resources Conservation Service, Palmer, AK
USDA Natural Resources Conservation Service, Washington, DC
USDA Forest Service, Charley Streuli, Petersburg Supervisor's Office, Petersburg, AK
USDA Forest Service, Cynthia Sever, Petersburg Supervisor's Office, Petersburg, AK
USDA Forest Service, Director of Forest Management, Regional Office, Juneau, AK
USDA Forest Service, Beth Pendleton, Regional Forester, Regional Office, Juneau, AK
USDA Forest Service, Forestry Sciences Lab, Juneau, AK
USDA Forest Service, Forrest Cole, Ketchikan Supervisor's Office, Ketchikan, AK
USDA Forest Service, Kathy Peterson, Sitka Supervior's Office, Sitka, AK
USDA Forest Service, Kent Nicholson, Thorne Bay Ranger District, Thorne Bay, AK
USDA Forest Service, Craig Ranger District, Craig, AK
USDA Forest Service, Thorne Bay Ranger District, Thorne Bay, AK
USDA Forest Service, Rocky Mountain Research Station, Ogden, UT
USDA Forest Service, Sue Jennings, Petersburg Supervisor's Office, Petersburg, AK
USDA Forest Service, Susan Howle, Ketchikan Supervisor's Office, Ketchikan, AK
USDA Forest Service, Supervisor's Office, Chugach National Forest, Anchorage, AK
USDA Forest Service, Washington Office, Washington, DC
USDA National Agricultural Library, Beltsville, MD
USDA Office of Civil Rights, Washington, DC
USDA Office of Planning and Accountability, Washington, DC
USDI Alaska Affairs, Washington, DC
USDI Bureau of Land Management, Anchorage, AK
USDI Fish and Wildlife Service, Juneau, AK
USDI Fish and Wildlife Service, Ketchikan, AK
USDI Office of Environmental Policy & Compliance, Anchorage, AK
USDI Office of Environmental Policy & Compliance, Washington, DC
U.S. Dept. of Transportation, Washington, DC
U.S. Naval Observatory, Washington, DC
U.S. Navy Environmental Protection Division, Washington DC
Wild and Scenic Rivers Program, Burbank, WA

Individuals

Adrian Morris, Klawock, AK
Allyn Hayes, Ward Cove, AK
Andrew Dolloff, Blacksburg, VA
Barbara Huffman, Ketchikan, AK
Barnett Freedman, Thorne Bay, AK
Bart Eaton, Vashon, WA
Ben Mitchell, Sitka, AK
Bill & Peggy Byford, Wrangell, AK
Bill Pfeifer, Ketchikan, AK
Bill Rotecki, Ketchikan, AK
Bob & Mary Lou Smart, Edna Bay, AK
Bob Armstrong, Ketchikan, AK
Bob Bramblett, Bozeman, MT
Brent Cole, Craig, AK
Brian Castle, Craig, AK
C.W. Shingleton, Coffman Cove, AK

Carleen Gotelli, Ketchikan, AK
Charlene Heath, Ward Cove, AK
Charley Streuli, Petersburg, AK
Cheryl Fecko, Craig, AK
Chuck Bateman, Coffman Cove, AK
Cindy Barber, Ketchikan, AK
Craig Moore, Ketchikan, AK
David Anniskette, Klawock, AK
Deidra Holum, Ketchikan, AK
Dick Allen, Ketchikan, AK
Dick Artley, Grangeville, ID
Dick Simkins, Hamilton, MT
Dick Young, Coffman Cove, AK
Dorothy Brady, Wrangell, AK
Dorothy Sheppard, Naukati, AK
Doug Rhoeds, Craig, AK
Ed & Marion Glenz, Meyers Chuck, AK
Ed Zastrow, Ketchikan, AK
Edward Mechum, Ketchikan, AK
Edward Coville, Ward Cove, AK
Eric Wyatt, Edna Bay, AK
Erik Johnson, Olympia, WA
Frank & Pat Roppel, Wrangell, AK
Fred Ensign, Craig, AK
Fred Triem, Petersburg, AK
Gary Zumstro, Sequim, WA
Gary, Jean, & Katie Soderberg, Coffman Cove, AK
George Woodbury, Woodbury Enterprise, Wrangell, AK
Gerald Welsh, Whale Pass, AK
Gerald Weston, Ketchikan, AK
Gordon & Marilyn Olsen, Petersburg, AK
Hal Sheppard, Craig, AK
Harriet Wadley, Craig, AK
Harvey Shelley, Klawock, AK
Henry Rambosek, Ketchikan, AK
Ira & Lucille Merrill, Wrangell, AK
J.W. Peterson, Ketchikan, AK
James Kelly, Thorne Bay, AK
Jack Oien, Ketchikan, AK
Jan Burgess, Hydaburg, AK
Jay Hansen, Craig, AK
Jay Urquhart, Juneau, AK
Jeanette Brucker, Coffman Cove, AK
Jenny Vassess, Ketchikan, AK
Jerry Linden, Two Harbors, MN
Jerry Lutton, Craig, AK
Jerry Stidd, Ketchikan AK
Jim Colier, Wrangell, AK

Jim Hendricks, Ketchikan, AK
Jim Jakebek, Ketchikan, AK
Jim See, Craig, AK
Jim McFarland, Thorne Bay, AK
Joe Williams II, Ketchikan, AK
John Clifton, Ketchikan, AK
Joseph Sebastian, Point Baker, AK
Joseph Stanton, Klawock, AK
Judith Willis, Coffman Cove, AK
Julia Longfield, Ketchikan, AK
Karen McCullough, Petersburg, AK
Karen Peterson, Thorne Bay, AK
Keith Dahl, Thorne Bay, AK
Kenneth Kiffer, Ketchikan, AK
Kim & Barbara Turley, Auke Bay, AK
Larry & Brenda Trumble, Klawock, AK
Larry & Jeannine Wilkinson, Thorne Bay, AK
Larry Young, Petersburg, AK
Len Brady, Thorne Bay, AK
Lester Douglas, Hydaburg, AK
Lewis Hiatt, Craig, AK
Linda Voorhees, Ketchikan, AK
Linnaea Olsen, Ward Cove, AK
Lonnie Collins, Bellingham, WA
Lynn Chaco, Thorne Bay, AK
Lynn Fischhaber, Craig, AK
Matilda Kushnick, Ketchikan, AK
Michael George, Klawock, AK
Michael Kampnich, Craig, AK
Michael McKinley, Ketchikan, AK
Michelle Page, Coffman Cove, AK
Mike Douville, Craig, AK
Mike McKimens, Craig, AK
Mr. & Mrs. Clarence Smith, Ward Cove, AK
Mr. & Mrs. John Storie, Pendleton, OR
Neil Gilbertson, Ketchikan, AK
P.A. McGarrigan, Ketchikan, AK
Pat Tolson, Hydaburg, AK
Patricia Muzzana, Anchorage, AK
Patrick Gardner, Craig, AK
Paul Brown, Sekiu, WA
Paul Friesema, Evanston, IL
Pete & Wanda Rice, Craig, AK
Pete Isom, Thorne Bay, AK
Pete Smith, Ketchikan, AK
Randall Jahnke, Ward Cove, AK
Randy Fairbanks, Kirkland, WA
Richard Myren, Juneau, AK

Richard Rathbone, Wrangell, AK
Richard Reeves, Springfield, OR
Rick Hirschberb, Olympia, WA
Roger Amundson, Ward Cove, AK
Ron Williams, Sr., Klawock, AK
Roy & Carole Hines, Ward Cove, AK
Roy Clark, Craig, AK
Russ Bartels, Edna Bay, AK
Sam Rabung, Neets Bay, AK
Shannon Hofstedt, Ward Cove, AK
Stephen Hofstedt, Ward Cove, AK
Steve Lewis, Tutitlek, AK
Steve Meredith, St. Helens, OR
Steve Warren, Edna Bay, AK
Susan Domenowske, Ketchikan, AK
Terry Schmitt, Ward Cove, AK
Tim Miles, Juneau, AK
Victoria Merritt, Craig, AK
Wally Kennedy, Craig, AK
Walt Begalka, Ketchikan, AK
Wes & Patricia Davidson, Ketchikan, AK
Wesley Buss, Coffman Cove, AK
Wesley Etherington, Coffman Cove, AK
William Cheney, Kake, AK
William Hollywood, IV, Ketchikan, AK
William Hendricks, Ketchikan, AK
William Joseph, Sr., Klawock, AK
William Pierce, Coffman Cove, AK
William Singer, Jr., Ward Cove, AK
William Messmer, Wrangell, AK

Libraries

Colorado State University Library, Fort Collins, CO
Craig Public Library, Craig, AK
Douglas Public Library, Juneau, AK
Elfin Cove Public Library, Elfin Cove, AK
Haines Public Library, Haines, AK
Hollis Public Library, Hollis, AK
Hyder Public Library, Hyder, AK
Kake Community Library, Kake, AK
Kasaan Community Library, Kasaan, AK
Ketchikan Public Library, Ketchikan, AK
Kettleson Memorial Library, Sitka, AK
Mendenhall Valley Public Library, Juneau, AK
Pelican Public Library, Pelican, AK
Petersburg Public Library, Petersburg, AK
Skagway Public Library, Skagway, AK

Tenakee Springs Public Library, Tenakee Springs, AK
Thorne Bay Community Library, Thorne Bay, AK
University of Minnesota Forestry Library, St. Paul, MN
USDA National Agricultural Library, Beltsville, MD
Wrangell Public Library, Wrangell, AK

Organizations and Businesses

3-D Logging, Thorne Bay, AK
Adam Baskett's Equipment Repair, Thorne Bay, AK
Adventure Alaska Southeast, Thorne Bay, AK
Alaska Cooperative Extension, Anchorage, AK
Alaska Fibre, Petersburg, AK
Alaska Forest Association, Ketchikan, AK
Alaska Forest Products, Naukati, AK
Alaska Pacific Powder Company, Ketchikan, AK
Alaska Rainforest Campaign, Sitka, AK
Alaskan Wood Products, Thorne Bay, AK
Alcan Forest Products, Ketchikan, AK
Basic Transportation Company, Ketchikan, AK
Bear Valley Lodge, Ketchikan, AK
Big "R" Manufacturing, Greeley, CO
Blue Lagoon Oyster Farm, Coffman Cove, AK
Boardwalk Wilderness Lodge, Thorne Bay, AK
Burgess Logging Inc., Leavenworth, AK
CARE, Ketckikan, AK
Carson Helicopters, Grants Pass, OR
Cascade Sand & Gravel, Petersburg, AK
Cascadia Wildlands Project, Cordova, AK
Cedar Bite Trading Post, Edna Bay, AK
Center for Biological Diversity, Idyllwild, CA
Center for Science in Public Participation, Victoria, BC, Canada
Chilkoot Lumber Company, Haines, AK
Columbia Helicopters, Inc., Portland, OR
Construction Machinery, Inc., Ward Cove, AK
Cove Lumber, Coffman Cove, AK
CSL Farm and Services, Edna Bay, AK
Custom Cuts, Ketchikan, AK
D & L Woodworks, Hoonah, AK
Doig Enterprises, Shelton, WA
Durette Construction Inc., Ward Cove, AK
Earthjustice, Juneau, AK
Eagle Wood Products, Craig, AK
Edna Bay Fish and Game Advisory Committee, Edna Bay, AK
Erickson Air-Crane LLC, Central Point, OR
Evergreen Helicopters, Anchorage, AK
Forest Conservation Council, Santa Fe, NM
Greenpeace, Sitka, AK
H & L Salvage, Thorne Bay, AK

Hedges B & B, Coffman Cove, AK
High Drive Drilling & Blasting, Ketchikan, AK
J & J Forest Products, Humptulips, WA
Juneau Empire, Juneau, AK
Kasaan Mountain Lumber & Log, Kasaan, AK
Ketchikan Chamber of Commerce, Ketchikan, AK
Ketchikan Cutting Company, Ketchikan, AK
Ketchikan Daily News, Ketchikan, AK
Ketchikan Visitors Bureau, Ketchikan, AK
KFSK News, Petersburg, AK
Last Chance Enterprises, Thorne Bay, AK
Log Cabin Resort & RV, Klawock, AK
Mariner, Inc., Ketchikan, AK
Murwood, Craig, AK
NBA, Sitka Branch, Sitka, AK
Naukati Adventures, Naukati, AK
Natural Resource Defense Council, Olympia, WA
Natural Resource Defense Council, Washington, DC
Naukati West Homeowners Association, Naukati, AK
Northern Star Cedar, Craig, AK
Northland Services, Inc., Thorne Bay, AK
Papac Alaska Logging, Inc., Craig, AK
Petro Alaska Inc., Thorne Bay, AK
Phoenix Logging, Klawock, AK
Portac Inc., Beaver, WA
Porter Lumber, Thorne Bay, AK
Prince of Wales Chamber of Commerce, Klawock, AK
Prince of Wales Conservation League, Craig, AK
Prince of Wales Loggers League, Craig, AK
Reid Brothers Logging & Construction, Petersburg, AK
Reinhart Employee Affairs & Public Relations, Ketchikan, AK
Resource Development Council of Alaska, Anchorage, AK
Samson Tug & Barge, Sitka, AK
Schmolck Mechanical Contractors, Ketchikan, AK
Seaford Construction, Thorne Bay, AK
Skyline Logging, Craig, AK
Society of American Foresters, Ketchikan, AK
SE Alaska Wood Products, Petersburg, AK
Southeast Alaska Resources, Ketchikan, AK
Southeast Alaska Timber, Ketchikan, AK
Southeast Exposure, Ketchikan, AK
Southeast Stevadoring Corp., Ketchikan, AK
Sierra Club, Juneau Group, Juneau, AK
Sitka Conservation Society, Sitka, AK
Southeast Alaska Conservation Council, Juneau, AK
Southeast Conference, Juneau, AK
St. Nick Forest Products, Craig, AK
Sumner Strait Advisory Committee, Point Baker, AK

Tetra Tech EC, Bothell, WA
The Mill, Inc., Petersburg, AK
The Wilderness Society, Anchorage, AK
Thorne Bay Wood Products, Thorne Bay, AK
Thuja Plicata Lumber, Thorne Bay, AK
Timber Data Company, Eugene, OR
Timbersource.com, Winchester, KY
Tolko Industries Ltd., Quesnel, BC, Canda
Tongass Cave Project
Tongass Conservation Society, Ketchikan, AK
TRUCO, Naukati, AK
Viking Lumber, Craig, AK
Welser Sawmill, Thorne Bay, AK
Western Gold Cedar Products, Thorne Bay, AK
Whitestone Logging, Inc., Hoonah, AK
Wood Cuts, Thorne Bay, AK
W.R. Jones & Son Lumber Company, Craig, AK
W.R. Tongsgard Logging & Lumber, Juneau, AK
Wrangell Resource Council, Wrangell, AK
Ziegler, Cloudy, King & Petersen Attorneys at Law, Ketchikan, AK

Public Officials, Tribal Organizations, and Cities

Albert Kookesh, Alaska State Representative, Juneau, AK
Angoon Community Association, Angoon, AK
Cape Fox Corporation, Ketchikan, AK
Chilkat Indian Village, Haines, AK
Chilkoot Indian Association, Haines, AK
City of Coffman Cove, Coffman Cove, AK
City of Craig, Craig, AK
City of Hydaburg, Hydaburg, AK
City of Kasaan, Kasaan, AK
City of Ketchikan, Ketchikan, AK
City of Klawock, Klawock, AK
City of Sitka, Sitka, AK
City of Thorne Bay, Mayor, Thorne Bay, AK
Community Council of Hollis, Hollis, AK
Community of Edna Bay, Edna Bay, AK
Community of Naukati West, Ketchikan, AK
Community of Whale Pass, Ketchikan, AK
Craig Community Association, Craig, AK
Don Young, Congressman, U.S. House of Representatives, Juneau, AK
Douglas Indian Association, Juneau, AK
Haida Corporation, Hydaburg, AK
Hoonah Indian Association, Hoonah, AK
Hydaburg Cooperative Association, Hydaburg, AK
Kake Tribal Corporation, Kake, AK
Kavilco Inc., Ketchikan, AK
Kavilco Inc., Seattle, WA

Ketchikan Indian Corporation, Ketchikan, AK
Klawock Cooperative Association, Klawock, AK
Klawock Heenya Corporation, Klawock, AK
Klawock Tribal Government, Klawock, AK
Kootznoowoo Inc., Juneau, AK
Lisa Murkowski, Senator, U.S. Senate, Ketchikan, AK
Mark Begich, Senator, U.S. Senate, Anchorage, AK
Metlakatla Indian Community, Metlakatla, AK
Organized Village of Kake, Kake, AK
Organized Village of Kasaan, Ketchikan, AK
Organized Village of Saxman, Ketchikan, AK
Petersburg Indian Association, Petersburg, AK
Point Baker Community Council, Point Baker, AK
Port Protection Community Association, Port Protection, AK
Sealaska Corporation, Juneau, AK
Shaan-Seet, Inc., Craig, AK
Sitka Tribe of Alaska, Sitka, AK
Tlingit and Haida Central Council, Juneau, AK
Tongass Tribe, Ketchikan, AK
University of Alaska Land Mgmt., Anchorage, AK
Wrangell Cooperative Association, Wrangell, AK
Yak-Tat-Kwann, Inc., Yakutat, AK
Yakutat Tlingat Tribe, Yakutat, AK

Glossary

Abiotic: Non-living. Climate is an abiotic component of ecosystems.

Access: The opportunities to approach, enter, and make use of public lands.

Access management: Acquiring rights and developing and maintaining facilities needed by people to get to and move through public lands (physical attributes).

Active channel: As defined for purposes of the riparian standards and guidelines includes stream channels, secondary channels, and braided channels. For the Alluvial Fan Process Group, it also includes gravel outwash lobes.

Adfluvial fish: Species of populations of fish that do not go to sea, but live in lakes and enter streams to spawn.

Affected environment: The natural environment that exists at the present time in an area being analyzed.

Age class: A distinct aggregation of trees originating from a single natural even or regeneration activity, or a grouping of trees, e.g., 10-year age class, as used in inventory or management.

Alaska Heritage Resource Survey (AHRS): The official list of cultural resources in the State of Alaska, maintained by the Office of History and Archaeology, Alaska Division of Parks and Outdoor Recreation.

Alaska National Interest Lands Conservation Act (ANILCA): Passed by Congress in ecosystem 1980, this legislation designated 14 National Forest wilderness areas in Southeast Alaska. The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551. Section 810 requires evaluations of subsistence impacts before changing the use of these lands.

Alaska Native Claims Settlement Act (ANCSA): Public Law 92-203, 92nd Congress, 85 Stat. 2371-2551. Approved December 18, 1971, ANCSA provides for the settlement of certain land claims of Alaska natives and for other purposes.

All-terrain vehicle (ATV): A gasoline powered, off-road vehicle used for accessing rote areas for recreational and work related activities: note all terrain vehicles generally have high clearance, high traction, high maneuverability and low speed. See Off-road vehicle

Allowable sale quantity (ASQ): The amount of timber that may be sold within a certain time period from an area of suitable land. The suitability of the land and the time period are specified in the Forest Plan.

Alluvial fan: A cone-shaped deposit of organic and mineral material made by a stream where it runs out onto a level plain or meets a slower stream.

Alluvium: Recent soil deposits resulting from modern rivers, including the sediment laid down in river beds, flood plains, lakes and at the foot of mountain slopes and estuaries.

Alpine: Parts of mountains above tree growth.

Amphipods: Any member of the invertebrate order Amphipoda (class Crustacea) inhabiting all parts of the sea, lakes, rivers, sand beaches, caves, and moist (warm) habitats on many tropical islands.

Anadromous fish: Fish which mature and spend much of their adult life in the ocean, returning to inland waters to spawn. Salmon and steelhead are examples of anadromous species of fish.
Anadromous Fisheries Habitat Assessment: An assessment conducted in 1994 within the Tongass National Forest (published in 1995) to study the effectiveness of current procedures for protecting anadromous fish habitat and to determine the need for any additional protection.

Aphid: A small (1 to 6 mm or 0.04 to 0.24 inches), soft-bodies, often pear-shaped insect of the family *Aphididae (Homoptera)* that sucks sap from leaves, stems or roots: note aphids excrete the processed sap as honeydew.

Aquatic ecosystem: A stream, channel, lake or estuary bed, the water itself, and the biotic communities that occur therein.

Aquatic Habitat Management Unit class: See stream classes

Aquifer: A saturated, permeable geologic unit of sediment or rock that can transmit significant quantities of water under ordinary hydraulic gradients.

Aspect: The direction a slope faces. A hillside facing east has an eastern aspect.

ASQ: See allowable sale quantity.

Average-snow deer habitat: POG forest below 1,500 feet. POG is defined as all seven-size classifications including SD-4H, SD-4N, SD-4S, SD-5H, SD-5N, SD-5S, and SD-67 in the SDM GIS data. It is considered in reference to deer winter habitat. Also called average-snow deer winter range.

Background: The distant part of a landscape. The seen or viewed area located from 3 or 5 miles to infinity from the viewer (see also “Foreground” and “Middleground”).

Bankfull width: The width of the wetted channel when the water surface is at the same elevation as the active floodplain.

Basal area: The area of the cross section of a tree trunk near its base, usually 4 1/2 feet above the ground. Basal area is a way to measure how much of a site is occupied by trees. The term basal area is often used to describe the collective basal area of trees per acre.

Beach fringe: The area inland from salt water shorelines that is typically forested.

Bedload: Sand, silt, and gravel, or soil and rock debris rolled along the bottom of a stream by the moving water.

Benthic: Pertaining to the sea bottom or to organisms that live on the sea bottom.

Best management practice (BMP): Land management methods, measures or practices selected by an agency to meet its non-point source control needs. BMPs include, but are not limited to structural and non-structural controls and operation and maintenance procedures. BMPs can be applied before, during and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters. BMPs are selected on the basis of site-specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility. BMPs are found in Forest Service Handbook (FSH) 2509.

Biogeographic provinces: Twenty-one ecological subdivisions of Southeast Alaska that are identified by generally distinct ecological, physiogeographic, and biogeographic features. Plant and animal species composition, climate, and geology within each province are generally more similar within than among adjacent provinces. Historical events (such as glaciers and uplifting) are important to the nature of the province and to the barriers that distinguish each province.

Biological assessment: A biological analysis conducted for major Federal construction projects requiring an environmental impact statement, in accordance with legal requirements under Section 7 of the Endangered Species Act (16 U.S.C. 1536). The purpose of the assessment and resulting document is to determine whether the proposed action is likely to affect a species that has been listed or proposed as an endangered or threatened species.

Biological diversity: The number and abundance of species found within a common environment. This includes the variety of genes, species, ecosystems, and the ecological processes that connect everything in a common environment.

Biological evaluation: A documented USDA Forest Service review of programs and activities that contains sufficient detail to determine how an action or proposed action may affect any species that has been listed or proposed as threatened, endangered, or sensitive.

Biomass: The total weight of all living organisms in a biological community.

Biotic: Living. Green plants and soil microorganisms are biotic components of ecosystems.

Blowdown: See Windthrow.

Board foot: A measurement term for lumber or timber. It is the amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide.

Braided streams or channels: A stream flowing in several dividing and reuniting channels resembling the strands of a braid, the cause of division being the obstruction by sediment deposited by the stream. FP 7-5

Browse: Twigs, leaves, and young shoots of trees and shrubs that animals eat. Browse is often used to refer to the shrubs eaten by big game, such as elk and deer.

Buffer: A vegetative strip or management zone of varying size, shape, and character maintained along a stream, lake, road, recreation site, or different vegetative zone to mitigate the impacts of action as on adjacent lands.

Cable logging: Logging that involves the transport of logs from stump to collection points by means of suspended steel cables.

Canopy: The part of any stand of trees represented by the tree crowns. It usually refers to the uppermost layer of foliage, but it can be use to describe lower layers in a multi-storied forest.

Capability: The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity.

Carrying capacity: The estimated maximum number of animals that can be sustained over the long-term in an area.

Cavity: A hole in a tree often used by wildlife species, usually birds, for nesting, roosting, and reproduction.

CFR: Code of Federal Regulations

Channel: A natural waterway of perceptible extent that periodically or continuously contains moving water. It has a definite bed and banks which serve to confine the water.

Channel type: A means of distinguishing parts of a stream system into segments that have fairly consistent physical and biological characteristics. For descriptions, see "Channel Type Field Guide," Forest Service publication R10-MB-6.

Clearcut: Harvesting method in which essentially all trees are cleared in one cut. It prepares the area for a new, even-aged stand. The area harvested may be a patch, stand, or strip large enough to be mapped or recorded as a separate age class in planning.

Climax: The culminating stage in plant succession for a given site. Climax vegetation is stable, self-maintaining, and self-reproducing.

Coarse Canopy Old-growth Forest: Old-growth forest that has lower crown density (number of trees) and non-uniform crown sizes and heights including large crowns and many canopy gaps.

Code of Federal Regulations (CFR): A codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the federal government.

Commercial forest: Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.

Composition: What an ecosystem is composed of. Composition could include water, minerals, trees, snags, wildlife, soil, microorganisms, and plant species,

Conifer: A tree that produces cones, such as a pine, spruce, or fir tree.

Connectivity (of habitats): A measure of the extent that forest areas between or outside reserves provide habitat for breeding, feeding, dispersal, and movement.

Corridor: Elements of the landscape that connect similar areas. Streamside vegetation may create a corridor of willows and hardwoods between meadows where wildlife feed.

Cover: Any feature that conceals wildlife or fish. Cover may be dead or live vegetation, boulders, or undercut stream banks. Animals use cover to escape from predators, rest, or feed.

Critical habitat: Specific areas designated as critical by the Secretary of Interior or Commerce for the survival and recovery of species listed as threatened or endangered pursuant to the Endangered Species Act.

Crown (of a tree): The tree canopy; the upper part of a tree or woody plant that carries the main branch system and foliage.

Cumulative effects: Effects on the environment that result from separate, individual actions that, collectively, becomes significant over time.

Decommissioning: To remove those elements of a road or buildings that reroute hillslope drainage and present slope stability hazards. For NFS roads, decommissioning removes the road from the long-term forest road transportation system. Otherwise, decommissioning is the same for all roads. Action on the ground for decommissioning ranges from blocking the entrance and

removing drainage structures to obliterating the road, returning the natural contours, and replanting vegetation. The end result is the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1). See also Road Decommissioning.

DBH: See diameter at breast height.

Deep-snow winter range: HPOG is forested habitat below 800 feet on south- and west-facing aspects (HPOG is equivalent to SD-5S, SD-5N and SD-67), and is considered in reference to deer and marten winter habitat.

Deer winter range (Habitat): An area, usually at lower elevation, used by big game during the winter months; usually smaller and better-defined than summer ranges.

Developed recreation: That type of recreation that occurs where modifications (improvements) enhance recreation opportunities and accommodate intensive recreation activities in a defined area.

Development LUDs: Land use designations that permit commercial timber harvest (Timber Production, Modified Landscape, and Scenic Viewshed) and convert some of the old-growth forest to early-to-mid-successional, regulated forests.

Diameter at breast height (DBH): The diameter of the stem of a tree measured at breast height 4.5 feet from the ground. Note: on sloping ground the measure is taken from the uphill side.

Direct employment: The jobs that are immediately associated with a given activity.

Dispersed recreation: That type of recreation use that requires few, if any, improvements and may occur over a wide area. This type of recreation involves activities related to roads, trails and undeveloped waterways and beaches. The activities do not necessarily take place on or adjacent to a road, trail, or waterway, only in conjunction with it. Activities are often dayuse oriented and include hunting, fishing, boating, off-road vehicle use, hiking and among others.

Distance zones: Areas of landscapes denoted by specified distances from the observer (foreground, middleground or background). Used as a frame of reference in which to discuss landscape characteristics of Management activities.

Disturbance: A force that results in changes in the structure and composition through natural events such as wind, fire, flood, avalanche, or mortality caused by insect or disease outbreaks or by human caused events (e.g., timber harvest)

Draft Environmental Impact Statement (DEIS): The version of the statement of environmental effects required for major Federal actions under Section 102 of the National Environmental Policy Act (NEPA) and released to the public and other agencies for review and comment.

Early forest succession: The biotic (or life) community that develops immediately following the removal or destruction of vegetation in an area. For instance, grasses may be the first plants to grow in an area that was burned.

Ecological subsections: Eighty-five terrestrial ecosystems mapped and described for Southeast Alaska and adjourning areas of Canada (Nowacki et al. 2001). These mid-sized terrestrial ecosystems body similar ecological characteristics including landforms, streams, vegetation,

soils, and wetlands. They provide a practical basis for ecosystem management, planning, and research.

Ecology: The interrelationships of living things to one another and the environment, or the study of these interrelationships.

Edge: The more or less well defined boundary between two or more elements of the environment, e.g., a field adjacent to a woodland or the boundary of different silvicultural treatments.

Effects: Effects, impacts, and consequences as used in this Environmental Impact Statement are synonymous. Effects may be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historical, cultural, economic, or social, and may be direct, indirect, or cumulative.

Direct effects: Results of an action occurring when and where the action takes place.

Indirect effects: Results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future.

Cumulative effects: Results of collective past, resent and reasonably foreseeable future actions.
Element (of ecosystems): An identifiable component, process, or condition of an ecosystem.

Endangered species: Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Endemic: Restricted to a particular locality. For example, a particular species or subspecies may occur on only one or a very few islands.

Environmental analysis: An analysis of alternative actions and their predictable short and long-term environmental effects, incorporating the physical, biological, economic, social and environmental design arts and their interactions.

Environmental Impact Statement (EIS): A document prepared by a federal agency in which anticipated environmental effects of a planned course of action or development are evaluated. A federal statute (Section 102 of the National Environmental Policy Act of 1969) requires that such statements be prepared. It is prepared first in draft or review form, and then in a final form. An impact statement includes the following pints: (1) the environmental impact of the proposed action, (2) any adverse impacts which cannot be avoided by the action, (3) the alternative courses of actions, (4) the relationships between local short-term productivity, and (5) a description of the irreversible and irretrievable commitment of resources which would occur if the action were accomplished

Erosion: The wearing away of the land surface by running water, wind, ice, gravity or other geological activities.

Escape cover: Vegetation of sufficient size and density to hide an animal, or an area used by animals to escape predators.

Estuary: An ecological system at the mouth of a stream where fresh water and salt water mix, and where salt marshes and intertidal mudflats are present. The landward extent of an estuary is

the limit of salt-intolerant vegetation, and the seaward extent is a stream's delta at mean low water.

Even-aged Management: The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees in forming the main canopy level of a stand usually does not exceed 20 percent of that age of the stand at harvest rotation age. Clearcut, shelter wood, or seed tree cutting methods produce even-aged stands.

Executive Order: An order or regulation issued by the President or some administrative authority under his or her direction.

Existing Scenic Integrity (ESI): Describes the visual appearance of the landscape at the time the project area scenery assessment in conducted. ESI is measured by the following condition types, as described in the Forest Plan:

Type I: Landscapes where only ecological change has occurred, except for trails needed for access. Landscapes appear to be untouched by human activities.

Type II: Landscapes where change is not noticed by the average forest visitor unless pointed out. These landscapes have been altered but changes are not perceptible.

Type III: Landscapes where changes are noticeable by the average forest visitor, but they do not attract attention. Changes appear to be minor disturbances.

Type IV: Landscapes where changes are easily noticed by the average forest visitor and may attract attention. Changes appear as disturbances but resemble natural patterns in the landscape.

Type V: Landscapes where changes are very noticeable and would be obvious to the average forest visitor. Changes tend to stand out, dominating the view of the landscape, but are shaped to resemble natural patterns.

Type VI: Landscapes where changes are in glaring contrast to the landscape's natural appearance. Changes appear as dramatic, large scale disturbances that strongly affect the average forest visitor.

Felling: The cutting down of trees.

Final Environmental Impact Statement (FEIS): The final version of the statement of environmental effects required for major federal actions under Section 102 of the National Environmental Policy Act. It is a revision of the Draft Environmental Impact Statement (DEIS) to include public and agency responses to the draft. The decision maker chooses which alternative to select from the FEIS, and subsequently issues a Record of Decision (ROD).

Fiscal year (FY): October 1 through September 30. The Fiscal Year is referred to by the calendar year which begins on January 1. For example, October 1, 1996, through September 30, 1997 is referred to as Fiscal Year 1997.

Fisheries habitat: Streams, lakes, and reservoirs that support fish, or have the potential to support fish.

Fish passage barrier: A point in a stream which presents a barrier to some life stage of a fish species, also called "red pipes" in some Agency documents; e.g. barriers may be the lip of a

culvert placed too high for juvenile fish, or a series of natural falls that do not allow any fish passage.

Floodplain: That portion of a river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages in response to a 100 year storm event.

Fluvial: Of, or pertaining to streams and rivers.

Forage: All browse and non-woody plants that are eaten by wildlife and livestock.

Forb: A grouping/category of herbaceous plants which are not included in the grass, shrub or tree groupings/categories; generally smaller flowering plants.

Foreground: A term used in visual management to describe the stand of trees immediately adjacent to a scenic area, recreation facility or forest highway. The area is located less than 1/4 mile from the viewer. (See Background and Middleground.)

Forest health: An expression of the relationship among biotic and abiotic influences on the forest (i.e., insects, diseases, atmospheric deposition, silvicultural treatments, harvesting objectives for a given forest unit now or in the future and sustain long-term site productivity.

Forest Road or Trail: A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources. (36 CFR 212.1)

Forested land: Land at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for non-forest use.

Forest Plan: Source of management direction for an individual Forest specifying activity and output levels for a period of 10-15 years. Management direction in the Plan is based on the issues identified at the time of the Plan's development.

Forest Road or Trail: A road or trail wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources (36 CFR 212.1).

Forest Supervisor: The official responsible for administering National Forest lands on an administrative unit, usually one or more National Forests. The Forest Supervisor reports to the Regional Forester.

Forest Transportation Atlas: A display of the System of roads, trails, and airfields of an administrative unit.

Forest Transportation Facility: A forest road or trail or an airfield that is displayed in a forest transportation atlas, including bridges, culverts, parking lots, marine access facilities, safety devices, and other improvements appurtenant to the forest transportation system (36 CFR 212.1).

Forest Transportation System: The system of National Forest System roads, National Forest System trails, and airfields on National Forest System lands (36 CFR 212.1).

Forest-wide Standards and Guidelines (S&Gs): A set of rules and guidance that directs management activities and establishes the environmental quality, natural renewable and

depletable resource requirements, conservation potential, and mitigation measures that apply to several land use designations.

Fragmentation: An element of biological diversity that describes the natural condition of habitats in terms of the size of discrete habitat blocks or patches, their distribution, the extent to which they are interconnected, and the effects of Management on these natural conditions. Also the process of reducing the size and connectivity of stands within a forest.

FSH: Forest Service Handbook

FSM: Forest Service Manual

Fuels: Plants and woody vegetation, both living and dead, that is capable of burning.

Fuelwood: Wood cut into short lengths for burning.

Function: All the processes within an ecosystem through which the elements interact, such as succession, the food chain, fire, weather, and the hydrologic cycle.

Game species: Any species of wildlife or fish that is harvested according to prescribed limits and seasons.

Geographic Information System (GIS): Information processing technology to input, store, manipulate, analyze, and display spatial and attribute data to support the decision making process. It is a system of computer maps with corresponding site-specific information that can be electronically combined to provide reports and maps

Geomorphology: The study of the forms of the land surface and the processes producing these surfaces. Also the study of the underlying rocks or parent materials and the landforms present that were formed in geological time.

Ground water: Water within the earth that supplies wells and springs. Specifically, water in the zone of saturation where openings in soils and rocks are filled; the upper surface level forms the water table.

Guideline: A preferred or advisable course of action or level of attainment designed to promote achievement of goals and objectives.

Habitat: The sum total of environmental conditions of a specific place occupied by wildlife or plant species or a population of each species.

Habitat capability: The estimated maximum number of fish or wildlife that can be supported by the amount and distribution of suitable habitat in an area.

Habitat diversity: The number of different types of wildlife habitat within a given area.

Habitat Suitability Index (HSI): A measure of the capability of the habitat to support deer, based on a variety of environmental factors, for example, slope, elevation, aspect, and forest type.

Habitat type: A way to classify land area. A habitat type can support certain climax vegetation, both tree and undergrowth species. Habitat typing can indicate the biological potential of a site.

Historic properties: The physical rains of districts, sites, structures, buildings, networks, events, or objects used by humans in the past. They may be historic, prehistoric, architectural, or archival in nature. Heritage properties are non-renewable aspects of our national heritage.

Hydric soil: A soil that is wet long enough to periodically produce anaerobic conditions, thereby influencing the growth of plants.

Hydrologic cycle: The complete cycle, through which water passes, commencing as atmospheric water vapor, passing into liquid and solid form as precipitation, thence along or into the ground surface, and finally again returning to the form of atmospheric water vapor, by means of evaporation and transpiration. Also called Water Cycle.

Hydrologic recovery: A return to natural conditions of water collection, storage, and discharge.

Hydrology: The science dealing with the study of water on the land, in the soil and underlying rocks, and in the atmosphere.

Individual tree selection: See regeneration method.

Interception: The process where precipitation is caught and held by foliage and lost by evaporation before it reaches the ground.

Interdisciplinary Team (IDT): A group of individuals with different training assembled to solve a problem or perform a task. The team is assembled out of recognition that no one scientific discipline is sufficiently broad to adequately solve the problem. Through interaction, participants bring different points of view and a broader range of expertise to bear on the problem

Intermediate cut: The removal of trees from a stand sometime between the beginning or formation of the stand and the regeneration cut. Types of intermediate cuts include thinning, release, and improvement cuttings.

Intermittent stream: A stream that flows only at certain times of the year when it receives water from streams or from some surface source, such as melting snow.

Inventoried Roadless Area (IRA): An undeveloped area typically exceeding 5,000 acres that meets the minimum criteria for Wilderness consideration under the Wilderness Act and that was inventoried during the Forest Service's Roadless Area Review and Evaluation (RARE II) process, subsequent assessments, or forest planning.

Irretrievable commitment: Applies to losses of production or use of renewable natural resources for a period of time. For example, timber production from an area is irretrievably lost during the time an area is allocated to a no-harvest prescription. If the allocation is changed to allow timber harvest, timber production can be resumed. The production lost is irretrievable, but the action is not irreversible.

Irreversible commitments: Decisions causing changes which cannot be reversed. For example, if a roadless area is allocated to allow timber harvest and timber is actually harvested, that area generally cannot, at a later date, be allocated to Wilderness. Once harvested, the ability of that area to meet Wilderness criteria has been irreversibly lost. Often applies to nonrenewable resources such as minerals and cultural resources.

Issue: A point, matter, or section of public discussion or interest to be addressed or decided.

Karst: A type of topography that develops in areas underlain by soluble rocks, primarily limestone. Dissolution of the subsurface strata results in areas of well-developed surface drainage that are sinkholes, collapsed channels, or caves.

Land and Resource Management Plan: Also called the Forest Plan or just the Plan, this document guides the Management of a particular National Forest and establishes management standards and guidelines for all lands of that National Forest.

Land Use Designation (LUD): A defined area of land specific to which management direction is applied.

Landing: A cleared area to which logs or trees are transported for loading onto trucks for transport to a mill or log transfer facility. Barges are sometimes used for landings in Southeast Alaska.

Landscape: A large land area composed of interacting ecosystems that are repeated due to factors such as geology, soils, climate, and human impacts. Landscapes are often used for coarse grain analysis.

Large woody debris (LWD): Any large piece of relatively stable woody material having a diameter of at least 4 inches and a length greater than 3 feet that intrudes into the stream channel.

Litter (forest litter): The freshly fallen or only slightly decomposed plant material on the forest floor. This layer includes foliage, bark fragments, twigs, flowers, and fruit.

Log transfer facility (LTF): Formerly referred to as terminal transfer facilities, log transfer facilities include the site and structures used for moving logs and timber products from land-based transportation forms to water-based transportation forms (or vice versa).

Logging systems: The equipment configuration employed for yarding logs; that is, moving the logs from the stump to the "landing," the point on a road at which they are loaded on trucks for transportation from the unit. Logging systems fall into the following main categories, in order of increasing cost:

Shovel logging: These mobile machines that travel throughout the unit to skid or swing logs to the landing. Common in Southeast Alaska is shovel logging, in which a log loader or "shovel" moves logs from the stump to the landing by repeatedly swinging the logs closer to the landing.

Cable systems: These consist of a stationary "yarder" at the landing; that is, a set of winches powering wire rope cables that travel through the top of an integrally mounted steel tower. The cables move logs to the landing, lifting the partly or completely clear of the ground through the lift provided by the tower. Because the equipment is stationary at the landing, and does not travel on the unit, site impacts are limited to soil and stream disturbance caused by dragging the logs.

Helicopter yarding: This consists of a helicopter lifting the logs via an attached choker (cable) from the felling point to a landing or to a barge. Ground disturbance is minimized as logs are fully suspended. The helicopter yarding method is generally used where it is uneconomical to construct roads or it is infeasible for other conventional harvest systems to meet the harvest prescription objectives.

MBF: Thousand board feet (see board feet)

Management action: Any activity undertaken as part of the administration of the National Forest.

Management direction: A statement of multiple-use and other goals and objectives, the associated land use prescriptions, and standards and guidelines for attaining the desired condition of the Forest Plan.

Management indicator species (MIS): Plant or animal species, communities, or special habitats selected for emphasis in planning, and which are monitored during forest plan implementation to assess the effects of management activities on their populations and the populations of other species with similar habitat needs which they may represent.

Marine Access Facility (MAF): An area used by humans to transfer items from land to saltwater or vice versa, that contains a structure such as a mooring buoy, dock, LTF, boat ramp, or a combination of these.

Mass movement or mass wasting: The down-slope movement of large masses of earth material by the force of gravity. Also called a landslide.

Mass movement index (MMI): Rating used to group soil map units that have similar properties with respect to the stability of natural slopes.

Matrix: The least fragmented, most continuous pattern element of a landscape; the vegetation type that is most continuous over a landscape.

Mature timber: Trees that have attained full development, especially height, and are in full seed production.

Memorandum of Understanding (MOU): An agreement between the Forest Service and others agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund obligating document.

Microclimate: The climate of a small site. It may differ from the climate at large of the area due to aspect, tree cover (or the absence of tree cover), or exposure to winds.

Middleground: The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly from the landscape; area located from 1/4 mile to 3-5 miles from the viewer. (See “Foreground” and “Background.”)

Mineral soil: Soil that consists mainly of inorganic material, such as weathered rock, rather than organic matter.

Mitigation: Actions taken to avoid, minimize, or rectify the impact of land management activities.

Model: An idealized representation of reality developed to describe, analyze, or understand it; a mathematical representation of the relationships under study (e.g., FORPLAN, wildlife habitat capability models).

Monitoring and evaluation: The periodic evaluation of forest management activities to determine how well objectives were met and how management practices should be adjusted. See “adaptive management.”

Mortality: Trees dying from natural causes, usually by size class in relation to sequential inventories or subsequent to incidents such as storms or insect and disease epidemics. The term mortality can also refer to the rate of death of a species in a given population or community.

Mosaic: Areas with a variety of plant communities over a landscape, such as areas with trees and areas without trees occurring over a landscape.

Motor Vehicle Use Map: A map that reflects designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System.

Multiple-use management: The management of all the various renewable surface resources of National Forest lands for a variety of purposes such as recreation, range, timber, wildlife and fish habitat, and watershed.

Muskeg: Muskeg is a wetland type (also called "peatland") in Southeast Alaska that has developed over thousands of years in depressions, or flat areas on gentle to steep slopes. These bogs have poorly drained; acidic, organic soils materials that support vegetation that can be either sphagnum moss or herbaceous plants. These vegetation types may have a lesser abundance of shrubs and stunted trees.

National Environmental Policy Act (NEPA): Congress passed NEPA in 1969 to encourage productive and enjoyable harmony between people and their environment. One of the major tenets of NEPA is its emphasis on public disclosure of possible environmental effects of any major action on public lands. Section 102 of NEPA requires a statement of possible environmental effects to be released to the public and other agencies for review and comment.

National Forest Management Act (NFMA): A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act requiring the preparation of Forest Plans.

National Forest System Road: A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority.

National Forest System Trail: A forest trail other than a trail that has been authorized by a legally documented right-of-way held by a state, county or other local public road authority.

National Register of Historic Places: A register of cultural resources of national, state, or local significance, maintained by the Department of the Interior.

National Wild and Scenic River System: Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values, designated by Congress under the Wild and Scenic Rivers Act for preservation of their free-flowing condition. May be classified and administered under one or more of the following categories: Wild, Scenic, and Recreational.

Natural resource: A feature of the natural environment that is of value in serving human needs.

Net sawlog volume: Trees suitable in size and quality for producing logs that can be processed into lumber. In Southeast Alaska, depending on the market, the volume may be processed as pulp or lumber.

No action alternative: The most likely condition expected to exist in the future if current proposed action or alternatives were not selected for the Logjam Timber sale.

Non-game: Wildlife species that are not hunted for sport, or subsistence.

Notice of Intent (NOI): A notice in the federal register of intent to prepare an environmental impact statement on a proposed action.

Off-highway vehicle: Any vehicle which is restricted by law from operating on public roads for general motor vehicle traffic; includes: motorbikes, mini-bikes, trail bikes, snowmobiles, dune buggies, all-terrain vehicles, and four-wheel drive, high clearance vehicles (FSM 2355.01).

Old growth: Old forests often containing several canopy layers, variety in tree sizes and species, decadent old trees, and standing and dead woody material.

Old-growth reserve (OGR): A contiguous unit of old-growth habitat to be managed to maintain the integrity of the old growth forest ecosystem.

Open road density: The length of forest development roads open for public access and use per unit area of land; usually expressed as miles of open road per square mile of land.

Organic soil: Soils that contain a high percentage (greater than 15 percent) of organic matter throughout the soil depth.

Overstory: The upper canopy layer; the plants below comprise the understory.

Parent material: The unconsolidated, and more or less chemically weathered, mineral or organic matter from which soils develop.

Partial cut: Any cutting in which only part of the stand is harvested. This may include thinning, selection, shelterwood, or an overstory removal.

Partial retention: A visual quality objective which, in general, means man's activities may be evident but must rain subordinate to the characteristic landscape.

Patch: An area of homogeneous vegetation, in structure and composition.

Personal use: The use of a forest product, such as firewood, for home use and not for commercial use.

Planning area: The area of National Forest System controlled by a decision document.

Plant communities: An assemblage of plants that, in general, occur together on similar site conditions.

Population viability: Probability that a population will persist for a specified period of time across its range. In reference to the Alaska Coastal Management Program, consistent with enforceable policies of approved management programs unless compliance is prohibited based upon the requirements of existing law applicable to the Federal agency's operations.

Precommercial thinning: Removing some of the trees from a stand that is too small to be sold for lumber or house logs, so the raining trees will grow faster.

Predator: An animal that lives by preying on other animals. Predators are at or near the tops of food chains.

Prescribed fire: Fire set intentionally in wildland fuels under prescribed conditions and circumstances. Prescribed fire can rejuvenate forage for livestock and wildlife or prepare sites for natural regeneration of trees.

Prescription: A planned series of treatments designed to change current stand structure to one that meets management goals taking in consideration ecological, economic and societal constraints.

Process group: A combination of similar stream channel types based on major differences in landform, gradient, and channel shapes.

Productive: The ability of an area to provide goods and services and to sustain ecological values.

Productive old growth (POG): Old-growth stands capable of producing 20 cubic feet per acre per year with 8,000 or more board feet per acre.

Public participation: Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service planning.

Public land: Land for which title and control rests with a government: Federal, state, regional, county, or municipal.

Qualitative: Relating to or involving comparisons based on individual qualities.

Ranger district: The administrative sub-unit of a National Forest that is supervised by a District Ranger who reports directly to the Forest Supervisor.

Raptor: A bird of prey, such as an eagle or hawk.

RARE II: Roadless Area Review and Evaluation. The national inventory of roadless and undeveloped areas, within the National Forests and Grasslands.

Recharge: The addition of water to ground water by natural or artificial processes.

Record of Decision (ROD): A public document separate from be associated with and environmental impact statement that identifies all alternatives, provides the agency's final decision, the rationale behind the decision, and the agency's commitments to monitoring and mitigating.

Recreation Opportunity Spectrum (ROS): A system for planning and managing recreation resources that categorizes recreation opportunities into seven classes; each class is defined in terms of the degree to which it satisfies certain recreation experience needs based on the extent to which the natural environment has been modified, the type of facilities provided, the degree of outdoor skills needed to enjoy the area and the relative density of recreation use.

The seven classes are:

Primitive: An unmodified environment generally greater than 5,000 acres in size and located generally at least 3 miles from all roads and other motorized travel routes. A very low interaction between users (generally less than 3 group encounters per day) results in a very high probability of experiencing solitude, freedom, closeness to nature, tranquility, self-reliance, challenge, and risk. Evidence of other users is low. Restrictions and controls are not evident after entering the land unit. Motorized use is rare.

Semi-Primitive Non-motorized: A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located at least 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) but not further than 3 miles from all roads and other motorized travel routes. Concentration of users is low (generally less than 10 group encounters per day), but there is often evidence of other users. There is a high probability of

experiencing solitude, freedom, closeness of nature, tranquility, self reliance, challenge, and risk. There is a minimum of subtle on-site controls. No roads are present in the area.

Semi-Primitive Motorized: A natural or natural-appearing environment generally greater than 2,500 acres in size and generally located within 1/2 mile of primitive roads and other motorized travel routes used by motor vehicles; but not closer that 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than primitive roads and other motored travel routes. Concentration of users is low (generally less than 10 group encounters per day), but here is often evidence of other users. There is a moderate probability of experiencing solitude, closeness to nature, and tranquility along with a high degree of self-reliance, challenge, and risk in using motorized equipment. Local roads may be present, or along saltwater shorelines there may be extensive boat traffic.

Roaded Natural: Resource modification and utilization are evident, in a predominantly naturally-appearing environment generally occurring within 1/2 mile (greater or less depending on terrain and vegetation, but no less than 1/4 mile) from better-than-primitive roads and other motorized travel routes. Interactions between users may be moderate to high (generally less than 20 group encounters per day), with evidence of other users prevalent. There is an opportunity to affiliate with other users in developed sites but with some chance for privacy. Self-reliance on outdoor skills is only of moderate importance with little opportunity for challenge and risk. Motorized use is allowed.

Roaded Modified: Vegetative and landform alterations typically dominate the landscape. There is little onsite control of users except for gated roads. There is moderate evidence of other users on roads (generally less than 20 group encounters per day), and little evidence of others or interactions at campsites. There is opportunity to get away from others but with easy access. Some self-reliance is required in building campsites and use of motorized equipment. A feeling of independence and freedom exists with little challenge and risk. Recreation users will likely encounter timber management activities.

Rural: The natural environment is substantially modified by land use activities. Opportunity to observe and affiliate with other users is important as is convenience of facilities. There is little opportunity for challenge and risk and self-reliance on outdoor skills is of little importance. Recreation facilities designed for group use are compatible. Users may have more that 20 group encounters per day.

Urban: Urbanized environment with dominant structures, traffic lights and paved streets. This class may have natural appearing backdrop. Recreation places maybe city parks and large resorts. Opportunity to observe and affiliate with other users is very important as is convenience of facilities and recreation opportunities. Interaction between large numbers of users is high. Outdoor skills, risk, and challenge are unimportant except for competitive sports. Intensive on-site controls are numerous.

Recreation places: Identified geographical areas having one or more physical characteristics that are particularly attractive to people in recreation activities. They may be beaches, streamside areas, roadside areas, trail corridors, hunting areas, or the immediate area surrounding a lake, cabin site, or campground.

Recreation site: A specific site and/or facility occurring within a Recreation Place. Examples of recreation sites include: recreation cabins, trailheads, picnic areas, and wildlife viewing blinds.

Red pipes: Passage barriers to various life stages of fish, generally culverts place improperly.

Reforestation: The reestablishment of forest cover either naturally or artificially (by direct seeding or planting).

Regeneration: The renewal of a tree crop by either natural or artificial means. The term is also used to refer to the young crop itself.

Regional Forester: The official of the USDA Forest Service responsible for administering an entire region of the Forest Service.

Reserve trees: Live or dead trees that are retained for various resource objectives such as wildlife, structural diversity, etc.

Resident fish: Fish that are not migratory and complete their life cycles in fresh water.

Responsible official: The Forest Service employee who has been delegated authority to make a specific decision.

Restoration (of ecosystems): Actions taken to modify an ecosystem to achieve a desired, healthy, and functioning condition.

Retention: The amount of commercial forest land removed from the timber base to protect other resources.

Riparian area: The area including a stream channel, lake or estuary bed, the water itself, and the plants that grow in the water and on the land next to the water.

Riparian Management area (RMA): Land areas delineated in the Forest Plan to provide for the Management of riparian resources. Specific standards and guidelines, by stream process group, are associated with riparian management areas. Riparian Management areas may be modified by watershed analysis

Road: A motor vehicle route over 50 inches wide, unless identified and managed as a trial (36 CFR 212.1).

Road decommissioning: Activities that result in the stabilization and restoration of unneeded roads to a more natural state. The term generally refers to temporary roads constructed for timber harvests that have has stream courses restored, culverts removed, waterbars added where needed, and cut and fill slopes revegetated (36 CFR 212.5).

Road construction or reconstruction: Supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.

Road density: The number of road miles per square mile of land area (miles per square mile)

Roadless area: An area of undeveloped public land where there are no improved roads maintained for travel by means of motorized vehicles intended for highway use.

Road maintenance: The ongoing upkeep of a road, necessary to retain or restore the road to the approved road management objective (FSM 7712.3).

Road maintenance level: The level of service maintained for a specific road, consistent with road management objectives and maintenance criteria (FSH 7709.58, section 12.3)

Maintenance Level 1: Assigned to intermittent service roads during the time they are closed to vehicle traffic. The closure period is one year or longer. Basic custodial maintenance is performed.

Maintenance Level 2: Assigned to roads open for use by high clearance vehicles.

Maintenance Level 3: Assigned to roads maintained for passenger car use but not for comfort and convenience.

Maintenance Level 4: Assigned to roads that provide moderate comfort and convenience at moderate speeds. Maintenance Level 5 – Assigned to roads that provide a high degree of comfort and convenience. Normally roads are double-laned and paved or aggregate surfaced with dust abetment.

Road management objective (RMO): Defines the intended purpose of an individual road based on management area direction and access management directives. Road management objectives contain design criteria, operation criteria and maintenance criteria.

Road storage: Storage is a term used only for NFS roads. The physical on-the-ground changes are similar to a decommissioned road; however, roads in storage are considered part of the long-term forest road transportation system and may be opened to vehicular traffic in the future. The process/action of storage involves closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use. Drainage structures in live drains are completely removed to restore natural patterns. Ditch relief culverts may be left in place and supplemented with deep water bars in order to minimize the cost of reusing the road in the future.

ROD: See record of decision

ROS: See recreation opportunity spectrum.

Rotation: The number of years required to establish and grow timber crops to a specified condition of maturity.

Sawtimber (sawlog): Trees that are 9 inches in diameter at breast height or larger that can be made into lumber.

Scale: In ecosystem management, it refers to the degree of resolution at which ecosystems are observed and measured.

Scoping: The ongoing process to determine public opinion, the agency receives comments and suggestions, and determine issues during the environmental analysis process. It may involve public meetings, telephone conversations, or letters.

Sedge: A family of plants with solid stems found in marshy areas.

Seen landscape: Those areas visible from the most frequently used travel ways (boat route, recreation road, or trail), or use area (recreation cabin or anchorage).

Sensitive species: Plant or animal species which are susceptible to habitat changes or impacts from activities. The official designation is made by the USDA Forest Service at the Regional level and is not part of the designation of Threatened or Endangered Species made by the US Fish and Wildlife Service.

Seral: The stage of succession of a plant or animal community that is transitional. If left alone, the seral stage will give way to another plant or animal community that represents a further stage of succession.

Shell midden: A term referring to shell and bone that have been discarded after harvest and processing for subsistence use.

Silviculture: The art and science of controlling the establishment, growth, composition, health, and quality of forests to meet the diverse needs and values of landowners and society on a sustainable basis.

Silvicultural system: A planned series of treatments whereby forests are tended, harvested, and replaced resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the process.

Size class: One of the three intervals of tree stem diameters used to classify timber in the Forest Plan data base. The size classes are: Seedling/Sapling (less than 5 inches in diameter); Pole Timber (5 to 9 inches in diameter); Sawtimber (greater than 9 inches in diameter)

Slash: The residue left on the ground after timber cutting or left after a storm, fire, or other event. Slash includes unused logs, uprooted stumps, branches, bark, etc.

Snag: A standing dead tree. Snags are important as habitat for a variety of wildlife species and their prey.

Soil compaction: The reduction of soil volume. For instance, the weight of heavy equipment on soils can compact the soil and thereby change it in some ways, such as in its ability to absorb water.

Soil productivity: The capability of a soil, in its normal environment, to produce a specific plant or sequence of plants under a specific sequence of management.

Sortyard: A location used to sort grades, types, and size of logs.

Special use permit: A permit issued to an individual or group by the USDA Forest Service for use of National Forest System land for a special purpose. Examples might be a Boy Scout Jamboree or a mountain bike race.

Stand: A group of trees that occupies a specific area and is similar in species, age, and condition.

Standards and guidelines: Standard: A course of action or level of attainment required by the forest plan to promote achievement of goals and objectives.

State Historic Preservation Office (SHPO): The official appointed or designated pursuant to Section 10 1(b) (1) of the National Historic Preservation Act of 1966, as amended, to administer the State Historic Preservation Program.

Stream classes: A means to categorize stream channels based on their fish production values. There are four stream classes on the Tongass National Forest. They are:

Class I: Streams and lakes with anadromous or adfluvial fish habitat; or high-quality resident fish waters listed in Appendix 68.1, Region 10 Aquatic Habitat Management Handbook (FSH 2609.24), June 1986; or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II: Streams and lakes with resident fish populations and generally steep (6-15 percent) gradient (can also include streams from 0-5 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria. These populations have limited fisheries values and generally occur upstream of migration barriers or have other habitat features that preclude anadromous fish use.

Class III: Perennial and intermittent streams with no fish populations but which have sufficient flow or transport sufficient sediment and debris to have an immediate influence on downstream water quality or fish habitat capability. These streams generally have bank-full widths greater than 5 feet and are highly incised into the surrounding hill slope.

Class IV: Intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have an immediate influence on downstream water quality or fish habitat capability. These streams generally are shallowly incised into the surrounding hill slope.

Non-streams: Rills and other watercourses, generally intermittent and less that 1 foot in bankfull width, little or no incision into the surrounding hill slope, and with little or no evidence of scour.

Stumpage: The value of the timber as it stands uncut in terms of an amount per unit area; synonym stumpage value.

Subsistence: Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as "the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of non-edible byproducts of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

Subspecies: An aggregate of similar populations of a species generally inhabiting a geographic subdivision of the range of the species and differing taxonomically (e.g. different size or color) from other populations of the species.

Succession: The natural replacement, in time, of one plant community with another. Conditions of the prior plant community (or successional stage) create conditions that are favorable for the establishment of the next stage.

Successional stage: A stage of development of a plant community as it moves from bare ground to climax. The grass-forb stage of succession precedes the woody shrub stage.

Suitable forest land: Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions, and for which there is reasonable assurance that such lands can be adequately restocked, and for which there is management direction that indicated that timber production is an appropriate use of that area.

Surface resources: Renewable resources that are on the surface of the earth, such as timber and forage, in contrast to ground water and minerals which are located beneath the surface.

Sustainable: The yield of a natural resource that can be produced continually at a given intensity of management is said to be sustainable.

Sustained yield: The amount of renewable resources that can be produced continuously at a given intensity of management.

Temporary road or trail: A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not included in a forest transportation atlas (36 CFR 212.1)

Terrestrial ecosystems: Plant communities that are not dependent on a perpetual source of water to grow.

Thinning: The practice of removing some of the trees in a stand, in a manner that the remaining trees will grow faster. The remaining trees grow faster because of reduced competition for nutrients, water, and sunlight. Thinning may also be done to change the characteristics of a stand for wildlife or other purposes. Thinning may be done at two different stages:

Precommercial thinning – Removing trees that are too small to make a merchantable product to improve tree spacing and promote more rapid growth.

Commercial thinning – Removing trees that have reached sufficient size to be manufactured into a product to improve tree spacing and promote more rapid growth.

Threatened species: A listed plant or animal species likely to become an endangered species within the foreseeable future, throughout all or a significant portion of its range. Threatened species are identified and defined in accordance with the 1973 Endangered Species Act and published in the Federal Register.

Threshold: The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.

Timber classification: Forested land is classified under each of the land management alternatives according to how it relates to the management of the timber resource. The following are definitions of timber classifications used for this purpose.

Nonforest: Land that has never supported forests and land formerly forested where use for timber production is precluded by development or other uses.

Forest: Land at least 10 percent stocked (based on crown cover) by forest trees of any size, or formerly having had such tree cover and not currently developed for nonforest use.

Suitable: Land to be managed for timber production on a regulated basis.

Unsuitable: Forest land withdrawn from timber utilization by statute or administrative regulation (for example, wilderness), or identified as inappropriate for timber production in the Forest planning process.

Timber stand improvement (TSI): All non-commercial intermediate cuttings and other treatments to improve composition, condition, and volume growth of a timber stand.

Tongass Timber Reform Act (TTRA): This Act (1990) requires annual appropriations for timber management on the Tongass National Forest, with a provision providing for the multiple use and sustained yield of all renewable resources.

Tractor logging: A logging method that uses tractors to carry or drag logs from the stump to a collection point.

Trail: A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.

Turbidity: An expression of the optical property that causes light to be scattered and absorbed rather than transmitted in straight lines through a water sample; turbidity in water is caused by the presence of suspended matter such as clay, silt, finely divided organic and inorganic matter, plankton, and other microscopic organisms.

Two-aged management: A regeneration method in which a portion of the trees in a harvest unit are cut in one entry, and the rest are left as residual trees, either singly or in patches resulting in the creation of two seperate age classes within the stand. The residual trees remain unharvested to provide structural diversity or other attributes to the developing new stand.

Unauthorized road or trail: A road or trail that is not a forest road or trail; or a temporary road or trail; and is not included in a forest transportation atlas.

Understory: The trees and woody shrubs growing beneath the overstory in a stand of trees.

Unsuitable lands: Forest land that is not managed for timber production. Reasons may be matters of policy, ecology, technology, silviculture, or economics

Utility volume: Logs that do not meet minimum requirements for sawtimber but are suitable for the production of usable chips.

Value comparison unit (VCU): First developed for the 1979 Tongass Land Management Plan as distinct geographic areas that generally encompass a drainage basin containing one or more large stream systems. Boundaries usually follow easily recognizable watershed divides. There are 926 units established to provide a common set of areas for which resource inventories could be conducted and resource value interpretations made.

Variety class: A way to classify landscapes according to their visual features. This system is based on the premise that landscapes with the greatest variety or diversity have the greatest potential for scenic value.

Vegetation management: Activities designed primarily to promote the health of forest vegetation for multiple-use purposes.

Viable population: The numbers of individuals of a species sufficient to ensure the long-term existence of the species in natural, self-sustaining populations that are adequately distributed throughout their range.

Viewshed: An expansive landscape or panoramic vista seen from a road, marine waterway, or specific viewpoint.

Visual Absorption Capacity (VAC): The capability of the landscape to visually absorb management activities. Landscapes are rated with high, moderate or low abilities to absorb management activities. These ratings reflect the degree of landscape variety in an area, viewing distance and topographic characteristics. As an example, steep, evenly sloped landscapes viewed in the foreground to middle ground are typically given a low VAC rating.

Visual resource: A part of the landscape important for its scenic quality. It may include a composite of terrain, geologic features, or vegetation.

Volume strata: Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan.

Water table: The upper surface of ground water or that level below which the soil is saturated with water.

Water yield: The runoff from a watershed, including groundwater outflow.

Watershed: The entire region drained by a waterway, or into a lake or reservoir. More specifically, a watershed is an area of land above a given point on a stream that contributes water to the stream flow at that point.

Wetlands: Those areas that are inundated or saturated by surface water or groundwater with a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions.

Wild and Scenic River: Rivers or sections of rivers designated by congressional actions under the 1968 Wild and Scenic Rivers Act. Wild and scenic rivers may be classified and administered under one or more of the following categories:

Wild river areas: Rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

Scenic river areas: Rivers or sections of rivers that are free of impoundments, with watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

Recreational river areas: Rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

Wilderness: Areas designated by congressional action under the 1964 Wilderness Act or subsequent Acts. Wilderness is defined as undeveloped Federal land retaining its primeval character and influence without permanent improvements or human habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or for a primitive and confined type of recreation; include at least 5,000 acres or are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historic value as well as ecologic and geologic interest. On the Tongass National Forest, Wilderness has been designated by ANILCA and TTRA.

Wildlife Analysis Area (WAA): A division of land used by the Alaska Department of Fish and Game for wildlife analysis.

Windfirm: Trees not likely to be blown over by the wind. These are usually trees that have been exposed to the wind throughout their life and have developed a strong root system or trees that are protected from the wind by terrain features or other trees.

Windthrow: The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There are generally three types of windthrow

Endemic, where individual trees are blown over;

Catastrophic, where a major windstorm can destroy hundreds of acres; and

Management related, where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.

Winter Range: An area, usually at lower elevation, used by big game during the winter months; usually smaller and better defined than summer ranges.

Yarding: Moving cut trees from where they fell to a centralized place (landing) for hauling away from the stand.

Young growth: Forest growth that has regenerated naturally or has been planted after some drastic interference (for example, clearcut harvest, serious fire, or insect attack) with the previous forest growth.

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Appendix A
REASONS FOR SCHEDULING THE ENVIRONMENTAL ANALYSIS OF THE BIG THORNE PROJECT
FY 2012

Appendix A

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APPENDIX A – REASONS FOR SCHEDULING THE ENVIRONMENTAL ANALYSIS OF THE BIG THORNE PROJECT

Introduction

Coordinated timber sale planning is essential for meeting the goals of the Tongass Land and Resource Management Plan (Forest Plan) and to provide an orderly flow of timber to local industry. To determine the volume of timber to offer each year, the Forest Service can look to current market conditions and the level of industry operations. However, the planning process for timber harvest projects requires the Forest Service to rely on projections of future harvest levels to decide how many timber sale projects to begin each year. This document explains how the Forest Service uses information about future markets and past experience with timber sale planning to determine the volume of timber that needs to be started through this process each year. This appendix relies heavily on the current annual timber demand analysis and the most recent timber sale schedule.

The purpose of this appendix is two-fold: first, to explain why this project was selected for inclusion into the Tongass Timber Program and second, to explain the basis and components of the Tongass Timber program. To accomplish this, the following questions are answered:

- How does the Big Thorne Project fit into the Tongass Timber Sale Program?
- Why is timber from the Tongass National Forest being offered for sale?
- How does the Forest Service develop forecasts about future timber market demand?
- What steps must be completed to prepare a sale for offer?
- How does the Forest Service maintain an orderly and predictable timber sale program?

How Does the Big Thorne Project Fit into the Tongass Timber Sale Program? How Does the Forest Service Decide where Timber Sale Projects Should be Located?

This project is currently in Gate 2, Project Analysis and Design (See Forest Service Handbook 2409.18, Chapter 30 and subsequent discussion about the Gate System) and involves environmental analysis and public disclosure as required by the National Environmental Policy Act (NEPA). The sawlog volume considered for harvest under the alternatives ranges from 83 to 167 MMBF and the utility volume ranges from 11 to 22 MMBF with harvest potentially beginning in 2013. This volume would contribute to the Tongass timber sale program. A no-action alternative was also analyzed in the DEIS. If an action alternative is selected in the decision for this project, this volume will be added to the volume available for sale.

This project contributes to the timber sale program planning objective of providing an orderly flow of timber from planning through harvest to meet timber supply requirements. A position statement (Gate 1) was completed to document that this project warrants additional investment of funds and personnel. Therefore, it is reasonable to be conducting the environmental analysis for this project at this time.

This project meets all laws and regulations governing the removal of timber from National Forest System lands, including Forest Service policies as described in Forest Service manuals and handbooks, and the Forest Plan and Record of Decision. Based on current year and anticipated future timber demand and the timber supply provisions of the Tongass Timber Reform Act, the Big Thorne Timber Harvest is needed at this time to meet timber sale needs identified on the approved multiple-year timber sale plan. Anticipated budget allocations and resources are sufficient to prepare and offer this project for sale as scheduled.

Why is This Project Occurring in This Location?

Areas are selected for environmental analysis for timber harvest projects for a variety of reasons. The reasons this project was considered in this area include:

- The project area offers economic timber that could contribute to local demand.
- The project area includes a well-developed road system that provides access to many of the proposed timber harvest units and may be used to transport harvested logs.
- A substantial infrastructure of existing sawmills is located in or near the project area, connected by the road system. This includes the largest remaining sawmill in Southeast Alaska.
- The project area is on the Prince of Wales Island road system, includes the City of Thorne Bay, and is near Coffman Cove, Naukati Bay, Craig, Klawock, and other cities, which would help support direct and indirect employment through the supply of personnel, goods and services.
- The Big Thorne project area contains sufficient acres of suitable and available forest land to make this timber harvest proposal reasonable. Areas with available timber need to be considered for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand from such forest, and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).
- The Big Thorne project can use the existing and currently permitted MAFs at Thorne Bay and Coffman Cove.
- The proposed harvest units are within development land use designations (LUD) as allocated by the Forest Plan. An exception is some young-growth thinning in Old-growth Habitat LUD which is being done to improve habitat.
- Effects on subsistence resources from timber harvest are projected to have few differences based on the sequence in which areas are harvested. Harvesting other areas with available timber on the Tongass National Forest is expected to have similar potential effects on resources, including subsistence resources, because of widespread distribution of subsistence use and other factors. Harvest within other areas is foreseeable under the Forest Plan.

In conclusion, this project area can provide a mixture of uses in compliance with the laws that govern National Forest management and is consistent with direction in the Forest Plan.

Why is Timber from the Tongass National Forest Being Offered for Sale?

National Legislation

On a national level, the legislative record is clear about the role of the timber program in the multiple-use mandate of the national forests. One of the original objectives for creation of national forests was to provide natural resources, including timber, for the American public. The Organic Administration Act of 1897 (partially repealed in 1976) directed the agency to manage the forests in order to "improve and protect the forest ... [and] for the purpose of securing favorable conditions of water flows, *and to furnish a continuous supply of timber* for the use and necessities of the citizens of the United States" (emphasis added). The Multiple-Use Sustained Yield Act of 1960 directs the Forest Service to administer federal lands for “outdoor recreation, range, timber, watershed, and wildlife and fish purposes.”

The National Forest Management Act (NFMA) of 1976 states that “the Secretary of Agriculture...may sell, at not less than appraised value, trees, portions of trees, or forest products located on National Forest System Lands.” Although the heart of the Act is the land management planning process for national forests, the Act also sets policy direction for timber management and public participation in Forest Service decision making. Under NFMA, the Forest Service was directed to “limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis.”

The NFMA directs the Forest Service to complete land management plans for all units of the National Forest System. Forest plans are developed by an interdisciplinary team to provide for the coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. Forest plans designate areas of national forest where different management activities and uses are considered appropriate, including those areas suitable for timber harvest.

Alaska-Specific Legislation

Timber from the Tongass National Forest is being offered for sale as part of the multiple-use mission of the Forest Service identified in the public laws guiding the agency. In addition, Alaska-specific legislation and the Tongass Forest Plan direct the Forest Service to seek to provide timber to meet market demand, subject to certain limitations.

The Alaska National Interest Lands Conservation Act (ANILCA) and the Tongass Timber Reform Act (TTRA) provide direction on the issue of Tongass timber supply. Section 101 of TTRA amended the ANILCA timber supply mandate and fixed budget appropriations and replaced them with the following text in Section 705 (a):

Sec. 705. (a) Subject to appropriations, other applicable law, and the requirements of the National Forest Management Act of 1976 (P.L. 94-588); except as provided in subsection (d) of this section, the Secretary shall, to the extent consistent with providing for the multiple use

and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the annual market demand from such forest for each planning cycle.

Tongass National Forest Land and Resource Management Plan (Forest Plan, as amended)

The Tongass Land Management Plan was completed in 1979 and revised in 1997. The Record of Decision (ROD) for the 2008 Tongass Land Management Plan Amendment (Forest Plan) was signed by the Alaska Regional Forester on January 23, 2008. The Forest Plan incorporates new resource information and scientific studies and reflects an extensive public involvement process. The 2008 Forest Plan defines appropriate activities within each of 19 land use designations (LUDs). Approximately 79 percent of the Tongass was allocated to LUDs where scheduled commercial timber harvest is not allowed.

The decision for the 2008 Forest Plan establishes the annual average allowable sale quantity (ASQ, the maximum amount of timber that may be offered for sale) at 267 million board feet (MMBF). This is the same as the ASQ established for the previous Forest Plan in 1997. While technically a limit on sale volume, in effect the ASQ also limits the amount of timber that may be harvested on the Tongass National Forest.

The environmental effects analysis in the Final EIS for the 2008 Forest Plan assumed the maximum timber harvest allowed under each alternative would occur annually over the next 100 to 150 years. In that way, the Forest Plan analysis displayed the maximum environmental effects that could be reasonably foreseen. However, substantially less timber volume and acres have actually been harvested over the last several years than the maximum level allowed under the 1997 Forest Plan (see Figure A-1). Thus, the effects on resources are expected to be less than projected in the 2008 Final EIS for the Forest Plan Amendment.

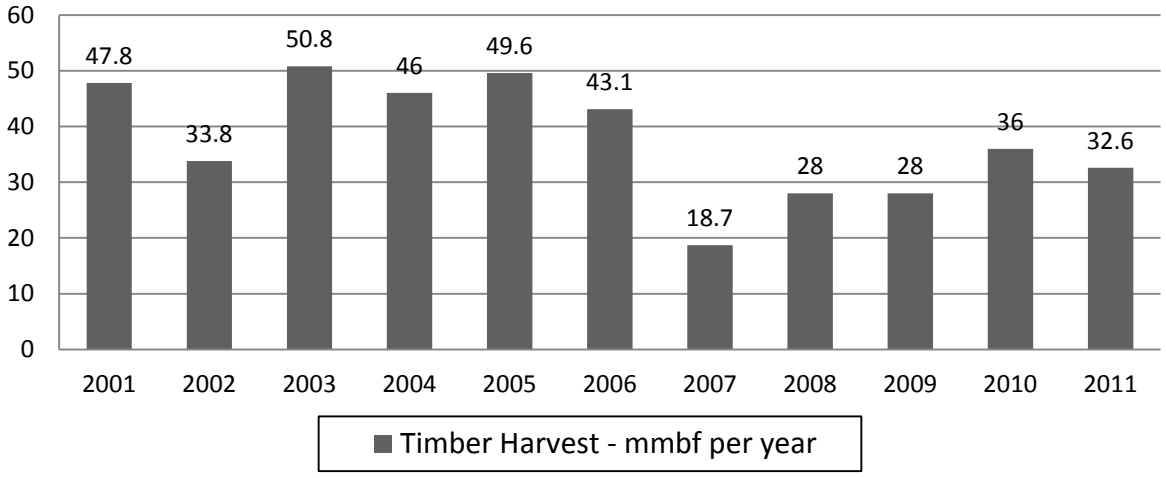

Figure A-1. Tongass Timber Harvest, Fiscal Years 2001-2011

The Record of Decision for the 2008 Forest Plan Amendment includes transition language for projects that were being planned when the Forest Plan was completed. That language

identifies three different categories of projects, depending on how far along they were in the project planning process when the Forest Plan Amendment was completed, and specifies the extent to which projects in each category must comply with the amended Forest Plan. The transition language lists this project as being in Category 3, which requires the Forest Supervisor to incorporate the direction in the 2008 Forest Plan.

USDA Investment Strategy for Creating Jobs and Healthy Communities in Southeast Alaska

Most rural communities in Southeast Alaska are experiencing declining populations especially in the younger age groups, fewer job opportunities, and increasing energy costs. USDA agencies (Farm Service Agency, Forest Service, Rural Development) and the U.S. Economic Development Administration (USEDA) are partnering to revitalize communities by moving towards a more diversified economy and restore public lands by supporting job creation in areas that offer growth potential: fisheries and mariculture, recreation and tourism, forest management, and renewable energy.

The goals of this USDA Investment Strategy include:

- creating quality jobs and sustainable economic growth;
- promoting small business creation, expansion, and retention;
- improving access to capital; and
- promoting job training and educational opportunities.

Working with the Juneau Economic Development Council (JEDC), USDA agencies collaborated with over 120 leaders from local businesses and communities to identify initiatives in four areas—Ocean Products, Visitor Services, Forest Products, and Renewable Energy—that will create a regional competitive advantage, thereby raising the economic conditions for all of Southeast Alaskans.

The partnership recently released a report that lists job creation initiatives for Southeast Alaska. The report (USDA Forest Service 2011d) was developed by these four economic cluster working groups made up of Southeast Alaska leaders in business, academia, nongovernmental organizations and State, local and Tribal governments. The process brings business leaders together with government and others to collaborate rather than compete; providing a platform where ideas to create economic opportunities can emerge.

How Does the Forest Service Develop Forecasts about Future Timber Market Demand?

Consistent with the provisions of the Tongass Timber Reform Act, the Forest Service makes two types of forecasts of market demand for timber from the Tongass National Forest. The first, “planning cycle market demand,” forecasts the long-term demand for timber from the Tongass over the life of the Forest Plan, derived from trends in international demand for end products manufactured from such timber. Based on these long-term projections, the Forest Service also estimates annual market demand in order to determine how much timber to plan to offer for sale.

Market Demand for the Planning Cycle

Research economists with the Forest Service's Pacific Northwest (PNW) Research Station have prepared several studies of "planning cycle market demand" for Tongass timber, including three General Technical Reports by Brooks and Haynes (1990, 1994, and 1997). In 2006, the PNW Research Station published new harvest projections (Brackley et al. 2006). This report and an addendum to it (Brackley and Haynes, 2008) provided key information for the 2008 Forest Plan Amendment analysis.

The Brackley et al. 2006 projections include four scenarios: 1) limited lumber production, which represents the situation the timber industry in Southeast Alaska has faced over the last several years; 2) expanded lumber production, which assumes some form of demand stimulus occurs; 3) medium integrated industry, which assumes sufficient demand stimulus occurs to cause an expansion of the current industry capacity and better utilization of forest products removed from public timber sales; and 4) high integrated industry, assumes some kind of additional demand stimulation to result in full utilization of all types of forest products available from the Tongass. More detailed information about these scenarios and their assumptions is in the Forest Plan Amendment Final EIS and ROD (January 2008), and in Brackley and Haynes, 2008.

The Brackley et al. 2006 study displays alternative projections of derived demand for timber from the Tongass National Forest. For the first two scenarios, which assume no market for low-grade sawlogs and utility volume, the estimates of planning cycle demand include sawtimber only. For the two integrated industry scenarios, the projections include total volume, including both sawlogs and utility. Utility volume must be cut down along with higher-quality timber even if there is no demand for it. It is the total volume of timber cut on the Tongass that is of most interest, in part because environmental effects result from total volume cut. In addition, any comparison of scenarios must be based on comparable figures. Table A-1 shows annualized Brackley et al 2006 projections for all four scenarios in terms of total volume.

After the Brackley et al. 2006 study was published, the Regional Forester approved a policy under which timber purchasers may ship to the lower 48 states unprocessed certain small-diameter and low-quality logs harvested from the Tongass, up to 50 percent of the volume harvested on each sale. This policy creates a market opportunity for low-quality material that the Brackley et al. 2006 study assumed would not be utilized under scenarios 1 and 2.

Table A-1. Tongass National Forest Timber Sale Volume Necessary to Supply Derived Demand for Decked Log Volume and Chips, in Million Board Feet (MMBF); (Alexander, 2008[1])

Year	Scenario 1 Limited lumber	Scenario 2 Expanded lumber	Scenario 3 Medium integrated	Scenario 4 High integrated
2007	49.8	61.9	67	67
2008	49.8	66.4	139	139
2009	51.3	72.4	151	151
2010	52.8	78.5	166	166
2011	52.8	84.5	184	184
2012	54.3	90.5	204	286
2013	55.8	98.1	204	291
2014	57.3	105.6	204	295
2015	58.9	113.2	204	299
2016	58.9	122.2	204	303
2017	60.4	131.3	204	308
2018	61.9	140.3	204	312
2019	63.4	150.1	204	317
2020	64.9	163.0	204	325
2021	66.4	175.0	204	333
2022	67.9	187.1	204	342
2023	69.4	200.7	204	351
2024	70.9	215.8	204	360
2025	72.4	230.9	204	370

[1]Annualized calculation to fulfill derived demand scenarios from Brackley et al. (2006). This table was created using annualized values provided by Dr. Allen Brackley (personal communication, Nov 29 2006) from the model used to develop derived demand estimates in Brackley et al. (2006). The values for Limited Lumber Scenario and Expanded Lumber scenarios reported in this table have been adjusted to include low quality material not included in the demand projections and include saw logs, cedar export, and utility (chip) volumes available from sawmill production. The Medium and High Integrated Scenarios are not adjusted and include saw logs, cedar exports, chip volumes, low-grade material, and utility in Brackley et al. (2006).

Annual Market Demand

The annual market demand forecast is a methodology used to set the short-term goals for the Tongass Timber Sale program – volume the Forest plans to offer for sale in the current year, pending sufficient funding and sufficient NEPA-cleared volume ready for sale.

The formulas and procedures used in forecasting annual market demand are described in a Forest Service report titled Responding to the Market Demand for Tongass Timber (Morse, 2000). These procedures, which have become known as the "Morse methodology," are based on the premise that:

- Forest product markets are volatile, especially in the short run.
- Timber purchasers in Southeast Alaska have few alternative suppliers of timber if they cannot obtain it from the Tongass National Forest. Oversupplying this market has relatively few adverse economic effects; undersupplying it can have much greater negative economic consequences.
- It takes years to prepare National Forest timber for sale, including completion of environmental impact statements.
- It is difficult to estimate demand for timber from the Tongass, even a year or two in advance.
- Industry must be able to respond to rapidly changing market conditions in order to remain competitive.

Accordingly, the Morse methodology establishes a system that considers factors such as mill capacity and utilization of that capacity, and seeks to build and maintain sufficient volume of timber under contract (i.e., timber purchased but not yet harvested) to allow the industry to react promptly to market fluctuations. Industry actions such as annual harvest levels are monitored and timber program targets are developed by estimating the amount of timber needed to replace volume harvested from year to year. The methodology is adaptive, because if harvest level drop below expectations and other factors remain constant, future timber sale offerings would also be reduced to levels needed to maintain the target level of volume under contract. Conversely, if harvest levels rise unexpectedly, future timber sale targets would also increase sufficiently to ensure that the inventory of volume under contract is not exhausted. By dealing with uncertainty in a flexible, science-based fashion, the Morse methodology is an example of adaptive management.

The Morse methodology originally used the projected harvest from the final 1997 Brooks and Haynes report. These procedures were updated (Alexander, 2008) to use the annual projected harvest figures from Brackley et al. 2006 in calculations of annual timber offer targets. No further changes to the Morse methodology were required as a result of the updated long-term demand projections contained in the Brackley et al. study.

In 2008, due to the Region 10 shipment policy, the Ketchikan veneer mill, and the success of Alaska producers in niche or specially markets, Brackley et al. 2008 determined that demand for National Forest timber in Alaska was on a trajectory most similar to scenario 2 (expanded lumber production). In 2011, due to the sharp downturn in wood products markets, the 'Limited Lumber' scenario was used. However, due to the export policy and

good overseas markets, this projection is back to being based on the 'Expanded Lumber, Scenario 2.

For FY 2012, the goal for volume of timber to be offered is 127 MMBF. This number is not intended to represent actual timber purchases in any given year. Rather, it reflects the estimated volume of timber the Forest Service needs to offer to replace the volume expected to be harvested and help build a 2-3 year supply of timber under contract, which allows the industry to respond to market fluctuations. The actual volume of timber offered for sale in any given year, however, reflects a combination of factors, such as final budget appropriations; completing the NEPA process; the practice of offering smaller sales for smaller operators rather than all the volume from a NEPA decision; the statutory requirement that timber sales offered in the Alaska Region appraise positive; and volume affected by litigation. Due to these factors, the amount of timber that is offered and sold may be less than the expected timber purchases as predicted in the annual demand calculations. The document displaying the annual demand calculation and a summary of the factors used in these calculations are in the project record and on the Alaska Region public website (http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5349461.pdf).

The planned annual timber volume offer could include a combination of new, previously offered, and reconfigured timber sales. Both green timber and salvage sales will be components of this program. Offerings will consist of those targeted for Small Business qualified firms, as well as a portion of the volume being made available for the open market.

For planning and scheduling purposes, the Tongass uses a 5-year timber sale plan, which is consistent with Forest Service Manual 2430. This 5-year plan is based on completed and ongoing environmental analyses and contains information to purchasers and other interested parties, and provides a plan that can be adjusted in response to changing market conditions. This plan is also located on the Alaska Region timber management public website after it is approved by the Forest Supervisor (see the reference section at the end of this appendix for the internet address).

Both the "annual market demand" and the "planning cycle market demand" projections are important for timber sale program planning purposes. They provide guidance to the Forest Service to request budgets, to make decisions about workforce and facilities, and to indicate the need to begin new environmental analysis for future program offerings. They also provide a basis for expectations regarding future harvest, and thus provide an important source of information for establishing the schedule of probable future sale offerings. The weight given to the projections will vary depending on a number of factors, such as how recently they were done and how well they appear to have accounted for recent, site-specific events in the timber market. More information on timber demand on the Tongass National Forest is presented in Appendix G of the Forest Plan Amendment Final EIS (USDA Forest Service 2008c).

What Steps Must Be Completed to Prepare a Sale for Offer?

The Tongass National Forest's timber sale program is complex. A number of projects are underway at any given point in time, each of which may be in a different stage of planning and preparation. A system of checkpoints, or "gates", helps the Forest Service track the accomplishments of each stage of a project from inception to contract termination.

Gate 1 – Initial Planning of Timber Sale Project_____

A Timber Sale Project Plan, often referred to as a Position Statement, is a brief analysis of the project area with the intent of determining the feasibility of a potential timber sale. After the Position Statement is developed, the Forest Service decides whether the project area merits continued investment of time and funds in sale planning.

Gate 2 – Project Analysis, Sale Area Design, and Decision_____

This step is commonly referred to as the "NEPA" phase and includes field work, public scoping, analysis, draft disclosure of the effects of the project on the environment, public comment, final analysis and disclosure, decision, and potentially administrative appeals and litigation. Gate 2 activities must be completed before a sale is awarded. Legislation, policy changes, and appeals and litigation have recently extended completion of some projects, often doubling the desired time frame.

Gate 3 – Preparation of a Timber Sale_____

During this step, the information and direction included in the decision document from Gate 2 is used to layout units and design roads on the ground. Additional site-specific information is collected at this time. In order to maintain an orderly flow of sales, Gate 3 activities need to be complete before a sale is advertised.

Gate 4 – Advertise a Timber Sale_____

The costs and value associated with the timber sale designed in Gate 3 are appraised and packaged in a timber sale contract. The contract is a legally binding document that tells a prospective timber sale purchaser how the sale must be harvested to conform to the project decision document. This step occurs during the final year of the project development and culminates with the advertisement of the project for sale.

Gate 5 – Bid Opening_____

Gate 5 is completed with the opening of bids for the project. If a bid is submitted, contractual provisions govern when the award of the sale takes place, when the sale will be completed (contract length and operation season), and how timber removal is to occur.

Gate 6 – Award a Timber Sale Contract_____

Gate 6 is the formal designation of a contract between a bidder and the Forest Service.

How Does the Forest Service Maintain an Orderly and Predictable Timber Sale Program?

Pools of Timber (Pipeline Volume)

As discussed earlier, the Forest Service tracks the accomplishment of the different steps of development of each timber sale with the Gate System (Forest Service Handbook 2409.18). From a timber sale program standpoint, it is also necessary to track and manage multiple projects as they move through the Gate System. Because of the timeframes needed to accomplish a given timber sale and the complexities inherent in timber sale project and program development, it is necessary to track various timber sale program volumes from Gate 1 through Gate 6.

The goal of the Tongass National Forest is to provide an even flow of timber sale offerings on a sustained-yield basis to meet market demand. In recent years, this has been difficult to accomplish due to a combination of uncertainties such as delays related to appeals and litigation; changing economic factors, such as rapid market fluctuations; and industry-related factors, such as changes in timber industry processing capabilities. To achieve an even flow of timber sale offerings, 'pools' of volume in various stages of the Gate System are maintained so volume offered can be balanced against current year demand and market cycle projections.

Today, upward trends in demand are resolved by moving out-year timber projects forward, which may leave later years not capable of meeting the needs of the industry. In other instances, a number of new projects are started based on today's market but will not be available for a number of years. By the time the added projects are ready for offer, the market and demand for this volume may have changed. Three pools of timber volume are tracked to achieve an even flow of timber sale offerings.

The objective of the timber pools concept is to maintain sufficient volume in preparation and under contract to be able to respond to yearly fluctuations in a timely manner. Table A-2 displays the current estimated volume in each pool, as well as the goal which the Tongass has established for the volume to be maintained in each pool, based on historic patterns. Appeals and litigation can cause timber sale projects to be reevaluated, which can cause delays in making projects available to move through the pools, thereby not fully meeting the goals for volumes in each pool.

Pool 1 - Timber Volume Under Analysis (Gate 1 and Gate 2)

Volume in Gate 1, the initial planning step, represents a large amount of volume, but represents a relatively low investment in each project. This relatively low investment level offers the timber program manager a higher degree of flexibility and thus, does not greatly influence the flow of volume through the pipeline. A signed Project Plan (FSH 2409.18, Chapter 20) is the completion of this gate.

Gate 2, timber volume under environmental analysis, includes sales being analyzed and undergoing public comment through the NEPA process. This pool includes any project that has started the scoping process through those projects ready to have a decision issued. In addition, tracking how much volume is involved in appeals or litigation may be necessary

to determine possible effects on the flow of potential timber sales. A signed NEPA decision (FSH 2409.18, Chapter 30) is the completion of this gate. Volume affected by appeals and litigation is tracked as a subset of this pool (Table A-3).

Based on historic patterns, the Tongass has established a goal for the pipeline volume to be maintained in each of the timber pools. The goal for Pool 1 is to be maintained at approximately 4.5 times the amount of the projected harvest to account for projects at various stages of analysis. That goal reflects a number of factors which can lead to a decrease in volume available, such as a decision in Gate 1 to drop further analysis in a particular planning area (called the "no go" decision), a falldown in estimated volume between Gate 1 and Gate 2, and volume not available for harvest due to appeals or litigation.

Pool 2 - Timber Volume Available for Sale (Gates 3, 4, and 5)____

Timber volume available for sale includes sales for which environmental analysis has been completed, and have had any administrative appeals and litigation resolved. Enough volume in this pool is needed to be maintained to be able to schedule future sale offerings of the size and configuration that best meets market needs in an orderly manner. Although projects may meet the above criteria, sales may not be offered if they appraise deficit or if changed circumstances would affect the ability to offer them. Whether a sale offering appraises deficit may change over time depending on the market and other factors. Also, some projects are either designed for small sales, or otherwise slated for small sales, if that determination was made as part of an informal appeal resolution or as part of a project's decision.

The amount of volume to be offered as small sales is based on a determination of the need of mills in the vicinity of the project area. Also taken into consideration is the amount of volume under contract.

As a matter of policy and sound business practice, the Forest Service announces probable future sale offerings through the Periodic Timber Sale Announcement. Delays at Gate 2 have affected sale preparation (Gate 3) and have made scheduling of sales uncertain. At Gate 4, sales have been fully prepared and appraised, and are available to managers to advertise for sale. This allows potential purchasers an opportunity to do their own evaluations of these offerings to determine whether to bid, and if so, at what level.

Timber in this pool can include a combination of new sales, previously offered unsold sales, and remaining volume from cancelled sales. The goal is to maintain Pool 2 at approximately 1.3 times the amount of the projected harvest to allow flexibility in offering sales.

Pool 3 - Timber Volume Under Contract (Gate 6) _____

Timber volume under contract contains sales that have been sold and a contract awarded to a purchaser, but which have not yet been fully harvested. Contract length is based on the amount of timber in the sale, the current timber demand, and the accessibility of the area for mobilization. The longer the contract period, the more flexibility the operator has to remove the timber based on market fluctuations. Timber contracts typically initially give the purchaser 3 years to harvest and remove the timber purchased; however, they can be

extended under certain circumstances, such as inoperable periods of weather, injunctions, and other contractual delays.

The Tongass attempts to maintain roughly 3 years of unharvested volume under contract to the industry as a whole. This volume of timber is the industry's dependable timber supply, which allows adaptability for business decisions. This practice is not limited to the Alaska Region, but is particularly pertinent to Alaska because of the nature of the land base. The relative absence of roads, the island geography, the steep terrain, and the consequent isolation of much of the timber land means that timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

A combination of projected harvest and projected demand is used to estimate the volume needed to maintain an even-flow timber sale program. As purchasers harvest timber, they deplete the volume under contract. Timber harvest is then planned and offered by the agency as sales that give the industry the opportunity to replace this volume and build or maintain their working inventory. Although there will be variation for practical reasons from year to year, in the long-run over both the high points and low points of the market cycle, the volume harvested will equal the timber volume sold, excluding cancelled sales.

The goal for Pool 3, volume under contract, is to maintain timber volume at approximately three times the amount of annual projected harvest. This allows the purchasers to have a continuous supply of timber volume available for harvest so they can plan their operations and be flexible to allow for weather conditions and market fluctuations.

Table A-2. Accomplishments in Gate System and Timber Pools (MMBF)

Pipeline Pool Volume	2012 Goal	FY 12
Pool 1 Volume Under Analysis (Gate 1 and 2)	571 [1]	270 to 480 [2]
Pool 2 Volume Available for Sale (Gate 3, Gate 4 and Gate 5)	165 [3]	10 [4]
Pool 3 Volume Under Contract (Gate 6)	381 [5]	104 [6]

[1] The goal for volume under analysis is approximately 4.5 times the projected harvest for the current year (using 127 MMBF for the 2012 timber demand based on expanded lumber scenario).
[2] Volume under analysis includes all timber volume in projects with a completed project plan (Gate 1) through completion of the environmental analysis (Gate 2). This figure includes about 4 MMBF of young-growth and stewardship projects.
[3] The goal for volume available for sale is to have at least 1.3 times the projected harvest for the current year (based on 127 MMBF) in sales that have approved NEPA and completion of timber sale preparation.
[4] Although the NEPA-cleared volume is 172 MMBF, most of this is not available for a sale offering except for small sales (57.9 MMBF). The estimated volume that is not available is either considered deficit at this time (70.7 MMBF) or affected by the reinstatement of the 2001 Roadless Rule (67.2 MMBF). This figure does include volume involved with on-going litigation – see Table A3.
[5]The goal for volume under contract is for purchasers to have three times the volume under contract (based on 127 MMBF).
[6] Estimated volume under contract available for harvest as of December 2012 (from USDA Forest Service Timber Management public website; the Internet address is provided in reference section at the end of this appendix).

How Appeals and Litigation Affect the Timber Sale Program

Timber harvest projects require site-specific environmental analysis that usually is documented in an environmental assessment (EA) or an environmental impact statement (EIS). The public is notified of the analysis and is provided the opportunity to comment on proposals and file an appeal on decisions. The administrative appeal process for most timber harvest projects takes up to 105 days before implementation to occur.

When decisions are appealed and affirmed through the administrative appeal process, the project can still be litigated. Although litigation does not always preclude offering timber for sale, the Forest Service and potential purchasers are often reluctant to enter into a contract where the outcome is uncertain. Recently, sales were enjoined from harvest after the contracts were awarded. Since litigation can be a lengthy process, litigation can also affect the Forest's ability to provide a reliable timber supply. Often with an unfavorable decision, the court will vacate the project's decision requiring more environmental analysis to occur.

Table A-3. Timber Volume Involved in Appeals and/or Litigation[1]

Timber volume with decision reversed on appeals [2]	72.8 MMBF
Timber volume involved with current litigation	109.5 MMBF

[1] As of February 2012.
[2] Decision overturned during internal review.

How Does The Forest Service Decide Where Timber Harvest Projects Should Be Located?

Forest Plan Land Use Designations

The location of timber sale projects is based first on the land allocation decisions in the Forest Plan. Under the Forest Plan, lands designated for possible timber harvest are in the development land use designations (LUDs), primarily the Timber Production, Modified Landscape, and Scenic Viewshed LUDs.

Timber Resource Land Suitability

The second consideration is the suitability of the land for timber production. Many acres within the development LUDs are not suitable for timber production due to non-forest vegetation, poor soils or steep slopes. The process for determining the suitability of the land is found in the 2008 Forest Plan Amendment, Appendix A. Figure A-2 depicts the classification of all the lands within the Tongass National Forest. For the Forest Plan Amendment analysis, four percent of the Tongass land base or 663,000 acres is the suitable, available and scheduled forest land, which provides the land base for the allowable sale quantity of 267 MMBF per year. Under the 2008 Forest Plan, the remainder of the land, approximately 96 percent, is not physically suitable, does not allow timber harvest, or is not scheduled.

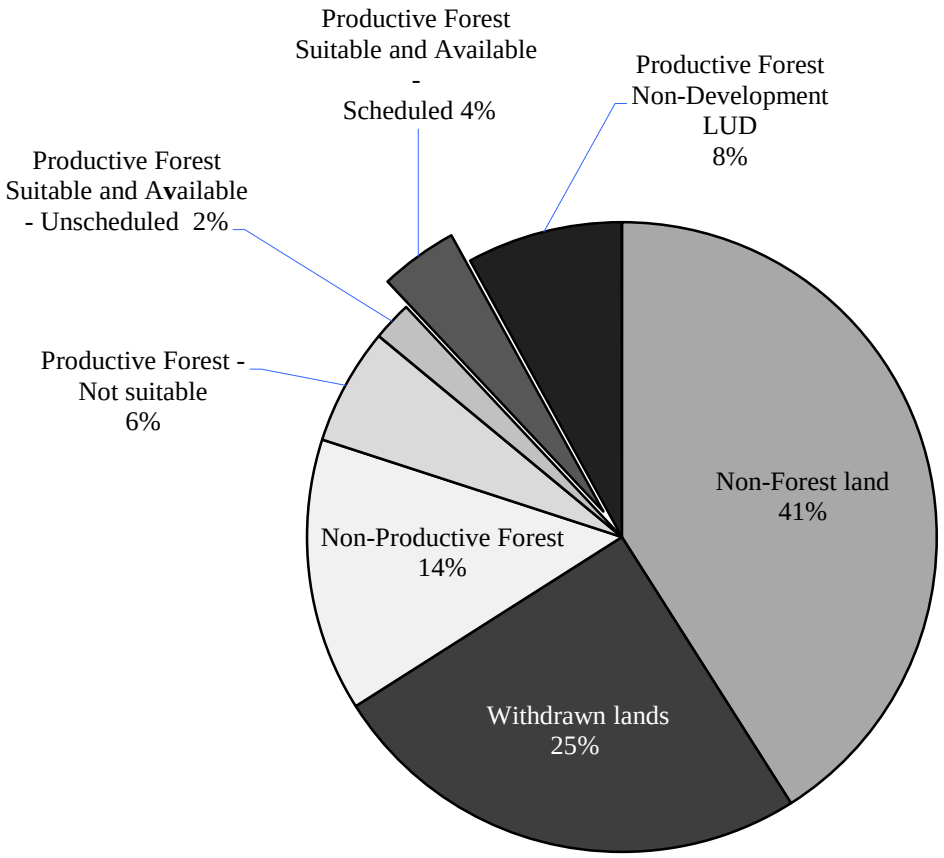

Figure A-2. 2008 Forest Plan Timber Resource Suitability Analysis

Non-Forest land – Land that has never supported forests, e.g. muskeg, rock, ice, etc.
Withdrawn Lands – Lands designated by Congress, the Secretary of Agriculture, or Chief for purposes that preclude timber harvest, e.g. Wilderness Areas.
Non-productive Forest – Forest land not capable of producing commercial wood on a sustained yield basis.
Productive Forest, Not suitable, Physical Attributes – Forest land unsuitable for timber due to physical attributes (steep slopes, soils, etc.) and/or inadequate information to ensure restocking of trees within five years of final harvest.
Productive Forest, Not Suitable, Non-development LUD – Productive forest lands where timber production is not allowed due to Forest Plan land use designation, e.g. Semi-Remote Recreation, Old-growth Habitat, etc.
Productive Forest, Suitable and Available, Scheduled – Forest land that meets all the criteria for timber production suitability and is available and is scheduled by the Forest Plan over the planning horizon.
Productive Forest Suitable and Available Unscheduled – Forest land that meets all the criteria for timber production suitability, is available for harvest, however was not scheduled in the Forest Plan model for harvest includes the model implementation reduction factor (MIRF) acreage of 226, 000 acres.

District-level Planning

The Forest Supervisor for the Tongass National Forest is responsible for the overall management of the Forest's timber sale program. Included within these responsibilities is making the determination on the amount of timber volume to be made available to industry. Whether or not sufficient funding is appropriated to attain the program is the responsibility of the Congress and the President.

District Rangers develop a timber sale plan of potential timber harvest projects. The goal of the plan is to attain the targeted offer level for the current year, based on the estimated annual market demand, and to develop a timber program for several years of the planning cycle. The offer level for the current year is based, to the extent possible, on the forecasted annual market demand. Actual demand may fluctuate from year to year due to short-term market fluctuations. Actual offer levels vary year to year depending on several factors, including volume in Gates 2 through 3, and current market conditions.

The District Ranger is responsible for identifying and recommending the project areas for the 5-Year Timber Sale Plan. The Ranger's role is to develop and recommend to the Forest Supervisor timber harvest projects that meet Forest Plan goals and objectives. Districts work on various timber sale projects simultaneously, resulting in continual movement of projects through the stages of the timber program pipeline. This schedule allows the necessary time to complete preliminary analysis, resource inventories, environmental documentation, field layout preparations and permit acquisition, appraisal of timber resource values, advertisement of sale characteristics for potential bidders, bid opening, and physical award of the timber sale. Project delays through the completion of Gate 2 attributable to legal injunctions and litigation have affected the offer level in recent years. Once all of the Rangers' recommendations are made and compiled into a consolidated schedule, the Forest Supervisor is responsible for the review and approval of the final timber sale plan and prioritization of projects as necessary.

Considerations the District Ranger takes into account for each project include:

- If the project area contains a sufficient number of suitable timber production acres allocated to development land use designations. Consideration includes if the timber volume being considered for harvest can be achieved while meeting Forest Plan goals, objectives, and standards and guidelines.
- Other resource uses and potential future uses of the area and of adjacent areas and of non-National Forest System lands.
- Areas where the investment necessary for project infrastructure (roads, bridges, etc) is achievable with the estimated value of timber volume in the project area. Where infrastructure already exists, such as the Big Thorne project area, the sale would allow any maintenance and upgrade of the facilities necessary for removal of timber volume.
- Areas where investments for the project coincide with long-term management based on Forest Plan direction.

The implementation of the sales on the timber sale plan depends in part on the final budget appropriation to the agency. In the event insufficient budget is allocated, or resolution of

pending litigation or other factors delay planned sales, timber sale projects are selected and implemented on a priority basis. Generally, the higher-priority projects include sales where investments such as road networks, camps or log transfer facilities have already been established or where land management status is not under dispute. The distribution of sales across the Tongass is also taken into account to distribute the effects of sales and to provide sales in proximity to timber processing facilities. Timber sale projects scheduled for the current year that are not implemented, or the remaining volume of projects that are only partially implemented, are shifted to future years in the plan. The sale plan becomes very dynamic in nature due to the number of influences on each district.

Conclusion

There is a long legislative recognition that timber harvest is one of the appropriate activities on national forests, starting with the founding legislation for national forests in 1897. The Organic Administration Act provides that national forests may be established *"to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of the citizens of the United States."*

Congress' policy for national forests, as stated in the Multiple-Use Sustained Yield Act of 1960, is "the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes." Accordingly, Congress has authorized the Secretary of Agriculture to sell trees and forest products from the national forests "at no less than appraised value." The National Forest Management Act directs that forest plans shall "provide for multiple use and sustained yield, and in particular, include coordination of outdoor recreation, range, timber, watershed, wildlife, fish and wilderness." ANLICA provided for timber harvest from the Tongass as well as other uses such as subsistence. Effects on subsistence resources from timber harvest Tongass-wide are projected to have few differences based on the sequence in which areas are harvested. Because of the multiple use mandate and other requirements of the laws, these effects to subsistence are necessary, consistent with sound management of public lands.

In addition to nationwide statutes, Section 101 of the Tongass Timber Reform Act directs the Forest Service to seek to meet market demand for timber from the Tongass, subject to certain qualifications. It is the goal of the Tongass National Forest to provide an even-flow of timber on a sustained-yield basis and in an economically efficient manner. The amount of timber offered for sale each year is based on the objective of offering enough volume for sale to meet the projected annual demand. That annual demand projection starts with installed mill capacity, and then looks to industry rate of capacity utilization under different market scenarios, the volume under contract, and a number of other factors, including anticipated harvest and the range of expected timber purchases.

As described by Morse (April 2000), in terms of short-term economic consequences, oversupplying the market is less damaging than undersupplying it. If more timber is offered than purchased in a given year, the unsold volume is still available for re-offer in future years. The unsold volume would have no environmental effects because it would not be

harvested. Conversely, a short fall in the supply of timber can be financially devastating to the industry.

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Appendix B
UNIT CARD INTRODUCTION

Appendix B
Unit Card Introduction

The unit cards in Volumes III, IV, and V are presented in numerical order and include maps and narratives describing site-specific information about each unit, activities proposed within each unit, the silvicultural prescription and any unit-specific resource concerns and protection or mitigation measures related to those concerns. For units that vary in shape, prescription, or logging system by alternative, the unit card text is specific to each alternative. Because of the many differences among the alternatives and the fact that often a subject unit is constant among alternatives, but adjacent units shown on the map are not, an individual map is provided for each action alternative that includes the subject unit. In the Big Thorne project, most of the economic, wildlife, and watershed concerns are mitigated through the allocation of units among alternatives and through the selection of the silvicultural system or harvest prescription. Other resource concerns, such as soils, scenery, and fisheries, are mitigated by unit design and adherence to Forest Plan standards and guidelines and best management practices (BMPs).

The unit card narratives and maps, in combination with Final EIS, the resource reports and GIS map layers, would be used during the implementation process to ensure that all aspects of the project are implemented within applicable standards and guidelines. Some adjustments to the prescription or changes to unit boundaries can be expected during implementation as needed to better meet specific on-site resource management and protection objectives. The Responsible Official will determine if the changes warrant additional analysis and a supplement to this EIS.

We expect that changes between the draft and final phases of the EIS will occur to respond to comments as well as to respond to new information gathered during any additional field reconnaissance and scientific review.

The following text describes the layout of the unit cards and provides general information on the harvest treatments and resource components of the unit cards. This information is important to consider in conjunction with the more specific information provided on the cards. Additionally, this introduction to the unit cards is designed to provide specific direction regarding the implementation of the project that pertains to certain circumstances that occur across multiple units. Rather than repeat this information on each individual unit card the direction for that circumstance is provided here. For example under Even-aged systems within the Harvest systems and Silvicultural Systems section below, the direction for mitigating windthrow along harvest opening edges is provided once rather than being repeated in each individual unit card text. This direction applies to all units being proposed for even-aged management.

Unit Card Header Information

Each unit card has a header block with information used to generally describe the stand's size, location, and volume proposed for harvest. Each header block contains the following information:

Unit Number: This is the number assigned to identify the unit.

Alternatives: This identifies the alternative(s) in which the unit is proposed.

Total Unit Acres: This is an estimate of total acres within the unit using aerial photos and GIS information. These numbers have been rounded.

Net Harvest Volume (MBF): This is the estimated volume in thousand board feet, available for harvest in the unit as determined from field estimates and stand examination plots.

VCU Number: The value comparison unit (VCU) the proposed harvest area falls predominantly within.

Land Use Designation (LUD): The land use designation or designations the proposed harvest unit falls within: Modified Landscape (ML), Scenic Viewshed (SV) and Timber Production (TM).

Harvest System: The method by which the timber is planned to be removed or yarded from the unit.

Prescription: The silvicultural system and regeneration method proposed for the unit.

Harvest Treatments and Silvicultural Systems

Silvicultural systems refer to a complete set of treatments used to manage forest stands and forest landscapes over long periods of time. This process includes the harvest or regeneration of the stand, intermediate cuttings, and other treatments necessary for the development and replacement of the forest stand. Silvicultural systems are applied through prescriptions, the written records of the examination, diagnosis, and treatment regimes prescribed for the stand. The final prescriptions, including detailed sale layout and marking instructions for any harvest units will be completed at the time of the Record of Decision for the FEIS. The project record for the DEIS currently contains a draft Region 10 Silvicultural diagnosis and prescription worksheet that documents the existing condition within each proposed harvest unit and the silvicultural prescription options available to meet alternative objectives.

Each unit card contains a narrative summarizing any concerns, recommendations, BMP's, and/or mitigations. The silviculture section contains a synopsis of the existing condition, desired condition and the planned prescription to move the stand from the existing to the desired condition. The existing condition text documents stand-specific information such as stand structure, insect, disease and defect ratings and windthrow risk. These ratings are for the unit as a whole. Specific portions of the unit may vary from the overall ratings. In some instances the windthrow discussion in Fisheries section, which is specific to riparian management areas (RMAs), may differ from the overall unit rating. The additional detail provided for RMAs is necessary for determining reasonable assurance of wind firmness (RAW) requirements along certain streams.

Individual unit card maps display harvest plans by alternative. Three symbols denote what parts of the original planned unit are to be harvested and by what method. Within old-growth units light grey indicates helicopter yarding and dark grey indicates either cable or shovel yarding. Helicopter, shovel or cable yarding areas will either be harvested under an even-aged regeneration system utilizing the clear cut method or by the uneven-

aged regeneration system utilizing the single tree or group selection method. Areas planned for uneven-aged management are denoted on the unit card maps with a tree symbol which is indicated in the map legend as “partial cut”. Helicopter, shovel or cable yarding areas not indicated as “partial cut” are planned for clear cutting.

Sometimes portions of the original reconnaissance area are not scheduled for harvest. These areas are typically where standards and guidelines exclude timber harvest from specific ground conditions to assure the conservation of certain resources within what would otherwise be areas available for harvest. Unsuitable soils and riparian management areas are examples. These areas must be excluded from harvest regardless of alternative because they physically have been determined unsuitable for harvest. In other cases certain portions of units are excluded from harvest to achieve management objectives required by standards and guidelines although the timber is otherwise suitable for harvest.

Legacy and visual buffers are representations and actual implementation may vary but will meet the same objectives. In these areas there are generally no physical circumstances that preclude harvest however they may be planned to coincide with or expand on such areas if the opportunity exists. Legacy and visual buffer areas are generally more flexible in how they are located within the unit as long as they achieve their design objectives.

In some cases portions of originally planned units have been deferred from timber harvest although there are no restrictions to harvest noted on the unit card map. These areas are denoted by white or no shading. There are two common circumstances resulting in the deferral of these areas. First is where portions of the original unit where found during unit reconnaissance to have timber with volume and or value that obviously would not support the cost of logging. These areas are usually muskeg inclusions or low volume-high defect cedar areas where poor drainage restricts tree growth. These areas typically have a merchantable sawlog volume of less than 8 mbf /acre, which is considered as unsuitable timber. In other instances portions of units or entire units have been deferred from harvest in an alternative to meet the specific design criteria or mitigations. An example would be where a wildlife travel corridor is maintained between two harvest areas in Alternative 4.

Even-aged Systems (Clearcut)

An even-aged system produces stands that consist of trees of the same or nearly the same age. A stand is even-aged if the range in tree ages normally does not exceed 20 percent of the rotation age (the age at which the stand is harvested). Stands would not be reentered for a regeneration cut until the next rotation in approximately 100 years. The regeneration method chosen to achieve even-aged management is clearcutting. Where this treatment is recommended, it has been determined that it is optimal for the site.

Even though all or a majority of the merchantable trees within a unit would be harvested by clearcutting, merchantable-sized trees are often retained within the unit for resource protection requirements. These may include stream buffers along unit boundaries or those that protrude into units and visual buffers. Reasonable assurance of windfirmness (RAW) buffers may also be applied to unit edges and stream or visual buffers that are determined to be at risk for wind damage after harvest. In addition, 30 percent of the proposed opening may be retained in patches or large groups of trees within the unit boundary for

the purpose of retaining legacy forest structure in VCUs where legacy is required by the Forest Plan (see below).

Justification for the use of even-aged systems are: (1) the control of disease such as hemlock dwarf mistletoe, (2) minimize the effects of windthrow and logging damage, and (3) the creation of conditions favorable for regeneration of Sitka spruce, Alaska yellow-cedar and western red cedar (Forest Plan, p 4-71 and 4-72).

General Direction Regarding the location of Even-aged Management Unit Boundaries:

Design units approximately as shown on the unit card map with adjustments as needed to make boundaries reasonably wind firm. For example, bring unit boundaries to the edges of existing young-growth or muskeg and to the lee side of a ridgeline where possible. Avoid sharp points, dips or other deviations in the unit boundary in areas exposed to southerly winds particularly where high wind risk timber types occur. Review the planned unit design with the district Silviculturist prior to layout to help identify problem areas. Where wind firm edges cannot be located and resources are at risk external to the unit boundary, review for RAW needs. Interdisciplinary review of RAW zones as described in the fish/watershed section on the unit card or otherwise identified along boundaries should occur at the time of layout to determine the RAW zone prescriptions. The presale lead for the unit should notify the IDT when preliminary boundaries have been located. At that time the IDT will review boundary locations in the field and determine the appropriate RAW zones and the harvest prescriptions.

NFMA regulations state that 100 acres is the maximum size of created openings allowed for the forest types of coastal Alaska, unless exempted under specific conditions. For the purpose of identifying a created opening size and what constitutes a break between even-aged openings the Forest Plan requires that leave strips between openings be of sufficient size to be managed as a separate stand or at least 10 acres. Where leave areas are required to reduce the size of an opening, avoid the isolation of suitable timber by leaving an economically operable setting where possible. Riparian management areas may also be used to constitute a break in unit size if they are at least 10 acres in size. . Past even-aged harvest areas with adequately restocked regeneration approximately 5 feet tall are no longer considered openings for the purpose of determining the 100 acre size limit.

Exceptions to individual units to the 100 acre size limit have specific text regarding that determination on the individual unit card.

General Direction Regarding the Implementation of the Legacy Forest Structure Standard and Guideline:

VCUs that have had concentrated past timber harvest activity and are at risk for not providing the full range of Forest Plan matrix functions are subject to the Legacy standard and guideline. In these VCUs, harvest units with openings larger than 20 acres are required to leave 30 percent of the original unit opening size in legacy forest structure. Structure left inside of the unit for other resource concerns, excluding Tongass Timber Reform Act (TTRA) buffers, can be counted towards the 30 percent retention requirement (Forest Plan, page 4-90). VCUs with legacy requirements are identified by the Forest

Plan. Out of the 15 VCUs with proposed harvest in the Big Thorne project area, 7 VCUs have legacy requirements; these are VCUs 5790, 5810, 5830, 5840, 5850, 5860, and 5972.

The original unit boundary is defined as the planned boundary of the unit (from the logging system and transportation analysis (LSTA)) prior to field verification. After field verification, however, the standard and guideline states that structure left within units for other resources can meet the 30 percent retention requirement as long as the structure is not within a TTRA buffer mapped during the LSTA and is representative of the existing old-growth stand characteristics of the unit, including age, size class, species composition and structural components. The acreage requirements of legacy are stated for each unit in the Silviculture text section of each unit card along with the number of acres that are shown on the unit card map for comparison. The planned legacy locations typically coincide with areas having other resource concerns such as unsuitable soils and riparian management areas. Each individual unit card text will state what other resource concerns the legacy placement should coincide with to best meet the objectives of the alternative design. The final location of legacy within harvest units can be adjusted from what is planned on the unit card maps if a more favorable design is identified during implementation.

Per Forest Plan direction legacy acres must remain indefinitely after harvest and shall be tracked as reserve areas through the life of the next stand.

Uneven-aged Management

Uneven-aged management maintains or creates a stand with trees of three or more distinct age (size) classes, either intimately mixed or in small groups. Trees may be removed individually, or in small groups or strips generally 2 acres or less in area. There is no final rotation age as in even-aged or two-aged systems, but instead regular, periodic entries designed to maintain three or more distinct age classes and a range of diameter classes in a reasonably well dispersed manner across the stand. This maintains a stand with relatively consistent tree cover of high structural diversity due to the high variability in tree sizes and individual tree characteristics. This remaining structure generally provides more diverse wildlife habitat than other regeneration systems and also reduces the visual impacts of the harvest area. The timber production goal of uneven-aged management is to economically harvest a percentage of the stand while retaining timber for future economically viable and sustainable entries. The next harvest under uneven-aged management would likely be in 50 to 100 years.

Single-tree or small group selection is used in units that have an uneven-aged management prescription and are utilizing a helicopter logging system. Helicopter yarding has been proposed to reduce road construction and associated costs, reduce the impact harvest activities might have on watersheds and wildlife as well as facilitate the use of uneven-aged management needed to meet scenery objectives. Uneven-aged management would be achieved by leaving approximately either 50 or 75 percent of the setting pretreatment basal area, based on standing live trees left uncut. Intermediate trees would also be retained, and canopy gaps created would allow for increased understory regeneration. A retention level of 75 percent is used in units that were identified as having particular windthrow, wildlife, or visual concerns. A retention level of 50 percent was used in units

with wildlife or visual concerns, but not requiring the higher level of retention. Future entries would continue the process of developing additional age classes.

Group selection is used in units where uneven-aged management is the preferred prescription to meet alternative objectives, and the unit is operationally feasible for conventional logging systems. Group selection involves removing trees in small groups, up to 2 acres in size, well dispersed through the stand. It is used in conjunction with conventional logging systems (shovel and cable yarding) because it allows sufficient room for the equipment to operate; however, helicopter yarding is used with this prescription in some settings where economics prohibited road construction to allow conventional logging systems to be used. When shovel yarding is used with uneven-aged management, swing corridors would be used to allow room for the equipment to operate. Size and distribution of corridors would be dependent on the terrain and road locations. When cable yarding is used with uneven-aged management, cable yarding would be conducted using yarding corridors. Distribution and shape of corridors would be dependent on the topography and landing locations. Some lateral yarding may be required to remove trees between yarding corridors. Uneven-aged management would be achieved by leaving approximately 67 percent of the setting acreage unharvested. Intermediate trees would also be retained, and canopy gaps created would allow for increased understory regeneration.

Commercial Thinning in Young Growth

Commercial thinning is proposed for 50-year-old and older young-growth stands under Alternatives 3, 4, and 5. The most important thing to consider is that contrary to old growth, young-growth stands are growing and changing rapidly. In most cases thinning treatment are not expected to be implemented for 5-10 years in order to allow these stands to continue to grow. Thinning is being proposed and evaluated now based on the analysis of current data projected forward in time to the expected thinning date using growth modeling. It is expected that additional timber inventory will occur in these stands prior to them being actually thinned. Marking guidelines covering the specifics of the treatment, such as tree spacing and species to favor for retention will be refined at that time based on the most up to date stand data.

Young-growth Silvicultural Objective/Desired Condition

Young-growth treatment objectives and desired conditions vary with regard to the position of a unit on the landscape. For example, greater emphasis would be given to improving forage production, in addition to improving stand growth/productivity, for a unit in deer winter range, compared to a unit located at higher elevation, above winter range. These treatment objectives and desired conditions are intended to influence treatment outcomes within the overarching LUD goals, objectives, and desired conditions defined by the Forest Plan.

The majority of the project area young-growth was categorized into landscape zones by the Prince of Wales Island Young Growth Thinning Treatment Options reports (Tetra Tech and Stuntzner Engineering/Forestry, 2011a and 2011b). Portions of the project area not categorized in that study were categorized under the Big Thorne project.

The landscape zone(s) for each young-growth unit are identified on the unit cards along with a short statement of the management objective. More detailed descriptions of the management objectives are provided below.

Deer Winter Range: The management goal of young-growth treatments in this landscape zone is to manage for a sustained yield, even flow of an industrial wood supply while improving wildlife habitat in treated stands during the suitable timber base rotation. Particular emphasis would be given to improving deer winter range conditions. Treatments would improve growth and productivity, improve forest health, and promote forest stand conditions that will provide a diverse array of marketable forest products. It is desired that at the end of the planned rotation, stands would be in a condition that regeneration harvests using even-aged, two-aged or uneven-aged silvicultural systems are feasible and appropriate. In addition, it is desired that the stands mature at different rates or have flexible rotation lengths so that harvests can be spread out and contribute to an even-flow, long-term sustained yield. This would also contribute to a greater mix of age classes and deer forage conditions across the landscape following the next rotation.

Uplands/Mountain Slopes: The management goal of young-growth treatments in this landscape zone is to manage for a sustained yield, even flow of an industrial wood supply, while meeting multiple resource objectives, wherever possible. Treatments would improve growth and productivity, improve forest health, and promote forest stand conditions that will provide a diverse array of marketable forest products. It is desired that at the end of the planned rotation, stands would be in a condition that regeneration harvests using even-aged, two-aged or uneven-aged silvicultural systems are feasible and appropriate. In addition, it is desired that the stands mature at different rates or have flexible rotation lengths so that harvests can be spread out and contribute to an even-flow, long-term sustained yield. This would also contribute to a greater mix of age classes and deer forage conditions following the next rotation.

Planned Treatments for Young Growth

The IDT has identified two different types of intermediate treatments to be conducted in project area young-growth units: a uniform crown thin and a systematic or “strip” thin. There is a range of treatments that can be utilized within each of these types of thinning prescriptions depending upon the stand conditions at the time of the treatment and the location of the unit with respect to the landscape zones.

Uniform Crown Thin: Young-growth units planned for this treatment will be at least 50 years of age at the time of the treatment. The objectives of these treatments are to:

- increase diameter-growth rate of remaining crop trees;
- create temporary canopy gaps to increase light to the forest floor and promote crown expansion, as well as understory plant diversity and abundance;
- improve tree characteristics that promote windfirmness possibly allowing future partial harvests;
- reduce the effects of stem exclusion stage on wildlife winter forage and habitat;

- remove poor quality trees from the upper and middle crown to favor the best codominant and dominant trees; and
- provide a volume of merchantable product in a manner which is operationally and economically feasible.

Logging systems used for this treatment will be shovel and cable systems. The majority of the cable thinning will be uphill yarding with narrow skyline corridors cut to a width between 12 and 16 feet.

Systematic Strip Thin: Young-growth units planned for this treatment will be at least 50 years of age at the time of the treatment. The objectives of these treatments are to:

- increase diameter-growth rate of remaining crop trees
- create side lighting and temporary canopy gaps in leave strips to increase light to the forest floor and promote crown expansion
- increase stand diversity by creating early seral conditions in cut strips
- provide a volume of merchantable product in a manner which is operationally and economically feasible
- remove poor quality codominant and dominant trees

Although uniform thinning is the preferred treatment, systematic or "strip" thinning may be used in some settings to reduce residual tree damage, allow operational feasibility, or reduce treatment costs. Strip thinning will remove all merchantable trees within a 20 to 60 foot wide corridor. The corridor width will depend on operational feasibility, visual concerns, and/or windthrow risk. Where visuals or windthrow are of concern, strips will be limited to a width of 20 feet. A 60 to 120 foot wide corridor will be retained between each harvested strip. The retention corridor will be thinned where operationally feasible. No more than 50 percent of the setting pretreatment basal area may be removed, including what occurs in the strips. Strip thinning will primarily be used in cable settings with downhill yarding that are unable to achieve full suspension.

Areas where uniform crown thinning and systematic strip thinning are proposed are shown on unit card maps. These areas will be refined in the future based on additional unit reconnaissance and timber inventory. Uniform crown thinning is the preferred treatment and should be applied wherever found feasible at that time.

Timber/Logging

This section of the unit card identifies the logging system(s) proposed for the unit in each alternative. It also identifies the proposed temporary or system roads to be used to access the unit in each alternative, along with the stored system roads to be reconstructed and the existing system roads to be used. Roads to be used for helicopter landings are also identified, where appropriate. Proposed and existing system roads are identified by road numbers shown on the unit card maps.

Log yarding practices are based on slope stability, soil disturbance, channel type, and stream class. Additional measures are taken to protect RMAs from possible disturbance associated with tree felling and yarding. Harvest activities near Class I, Class II, and Class

III streams require that trees be felled away from the stream buffer and that trees yarded across Class III stream courses, where applicable, be fully suspended to minimize the exposure of mineral soil. Trees near Class IV streams are felled away from the stream whenever feasible and logging debris introduced into Class IV streams is removed. Class IV streams are treated as part of the hillside, under slope stability standards and guidelines. Suspension requirements are used to minimize soil erosion, mass movement, and formation of new channels.

In addition, this section identifies if a unit is located in Phase 2 of the Timber Sale Program Adaptive Management Strategy (see Chapter 1).

Engineering/Roads

Detailed information on required road construction and reconstruction is provided in this section, including road lengths for all roads and road numbers for proposed and existing system roads. Road numbers are shown on the maps.

Road construction and reconstruction will follow applicable BMPs during layout and construction work. In particular adhere to the following BMP's: 12.17, 13.11, 14.2, 14.3, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10, 14.12, 14.17, and 14.18.

Best Management Practices

The following best management practices (BMPs) would be applied in order to protect water quality in the project area as specified in the Forest Plan. These BMPs apply whenever the situation warrants them. For example, BMP 12.5 applies to any units or roads that involve wetlands; BMPs 12.6, 12.6a, and 13.16 apply to any units and road activities involving streams; BMPs 13.2, 13.9, 13.10 apply to all timber harvest units and log landings; BMPs 14.1, 14.2, 14.3, 14.5, 14.6, 14.7, 14.8, 14.9, 14.10, 14.11, 14.12, 14.15, 14.17, 14.18, 14.19, 14.20, 14.22, and 14.24 apply to road construction, maintenance, and other activities, including quarries (as appropriate); BMPs 14.26 and 14.27 apply to activities at existing LTFs; and BMPs 12.8, 12.17, 13.1, 13.3, 13.4, 13.5, 13.11, 13.12, 13.14, 13.17, and 13.18 apply in general to all timber sale planning and implementation activities. Many of the most relevant BMPs are cited on the unit cards or are cited elsewhere in this introduction, as appropriate.

Watershed Management

BMP 12.5 (Wetland Identification, Evaluation, and Protection) – To identify wetland functions and value, and provide appropriate protection measures designed to avoid adverse hydrologic impacts.

BMP 12.6 (Riparian Area Designation and Protection) – To identify riparian areas and their associated management activities.

BMP 12.6a (Buffer Design and Layout) – To design streamside buffers to meet objectives defined during the implementation of BMP 12.6.

BMP 12.8 (Oil Pollution Prevention and Servicing/Refueling Operations) – To prevent contamination of surface and subsurface soil and water resources from spills of petroleum products.

BMP 12.17 (Revegetation of Disturbed Areas) – To provide ground cover to minimize soil erosion.

Timber Management

BMP 13.1 (Timber Sale Planning) – To incorporate soil and water resource considerations into timber sale planning.

BMP 13.2 (Timber Harvest Design) – To incorporate site-specific soil and water resource considerations into integrated timber harvest unit design criteria.

BMP 13.3 (Designating Water Quality Protection Needs on Sale Area/Unit Release Maps) – Delineate the location of protection areas and ensure their recognition, proper consideration, and protection on the ground.

BMP 13.4 (Timber Sale Operating Schedule) - To ensure that erosion control and timing responsibilities are incorporated into the Operating Schedule.

BMP 13.5 (Identification and Avoidance of Unstable Areas) – To avoid triggering mass movements and resultant erosion and sedimentation by excluding unstable areas from timber harvest.

BMP 13.9 (Determining Guidelines for Yarding Operations) – To select appropriate yarding systems and guidelines for protecting soil and water resources.

BMP 13.10 (Log Landing Location and Design) – To design and construct landings to minimize soil erosion and water quality degradation.

BMP 13.11 (Scheduling and Enforcement of Erosion Control Measures During Timber Sale Operations) – To ensure that the Purchaser's operations are conducted according to the Timber Sale Contract with respect to soil and water resource protection.

BMP 13.12 (Site Preparation) - Maintain sufficient ground cover to minimize soil erosion.

BMP 13.14 (Completion of Erosion Control for Unit Acceptance and Sale Closure) – To assure that the required erosion control work is completed before unit acceptance.

BMP 13.16 (Stream Channel Protection – Implementation and Enforcement) – To provide the site-specific stream protection prescriptions consistent with objectives identified under BMPs 12.6 and 12.6a. Objectives may include the following:

- Maintain the natural flow regime.
- Provide for unobstructed passage of storm flows.
- Maintain integrity of the riparian buffer to filter sediment and other pollutants.
- Restore the natural course of any stream that has been diverted as soon as practicable.
- Maintain natural channel integrity to protect aquatic habitat and other beneficial uses.
- Prevent adverse changes to the natural stream temperature regime.

BMP 13.17 (Nonrecurring "C" Provisions For Soil and Water Quality Protection) – To insert nonrecurring (Special) "C" provisions into the Timber Sale Contract to protect soil

and water resources, where standard "B" or "C" provisions do not apply or are inadequate to protect watershed values.

BMP 13.18 (Modification of the Timber Sale Contract) – To seek an Environmental Modification of the Timber Sale Contract if new circumstances or conditions indicate that the timber sale will cause irreparable damage to soil, water, or watershed values.

Transportation and Other Facilities Management

BMP 14.1 (Transportation Planning) – To assure soil and water resources are considered in transportation planning activities.

BMP 14.2 (Location of Transportation Facilities) – To assure water resources protection measures are considered when locating roads and trails.

BMP 14.3 (Design of Transportation Facilities) – To incorporate site-specific soil and water resource protection measures into the design of roads and trails.

BMP 14.5 (Road and Trail Erosion Control Plan) – Develop erosion control plans for road or trail projects to minimize or mitigate erosion, sedimentation, and resulting water quality degradation prior to the initiation of construction and maintenance activities. Ensure compliance through effective contract administration and timely implementation of erosion control measures.

BMP 14.6 (Timing Restrictions for Construction Activities) – Minimize erosion potential by restricting the operating schedule and conducting operations during lower risk periods.

BMP 14.7 (Measures to Minimize Mass Failures) – Minimize the chance and extent of road-related mass failures, including landslides and embankment slumps.

BMP 14.8 (Measures to Minimize Surface Erosion) – Minimize the erosion from cutslopes, fillslopes, and the road surface, and consequently reduce the risk of sediment production.

BMP 14.9 (Drainage Control to Minimize Erosion and Sedimentation) – Minimize the erosive effects of concentrated water flows from transportation facilities and the resulting degradation of water quality through proper design and construction of drainage control systems.

BMP 14.10 (Pioneer Road Construction) – Minimize sediment production associated with pioneer road construction.

BMP 14.11 (Timely Erosion Control Measures for Incomplete Projects) – Minimize erosion of and sedimentation from disturbed ground on incomplete projects by completing erosion control work prior to seasonal or extended shutdowns.

BMP 14.12 (Control of Excavation and Sidecast Material) – Minimize sedimentation from unconsolidated excavated and sidecast material caused by road construction, reconstruction, or maintenance.

BMP 14.14 (Control of In-channel Operations) – Minimize stream channel disturbances and related sediment production.

BMP 14.15 (Diversion of Flows Around Construction Sites) – Identify and implement diversion and de-watering requirements at construction sites to protect water quality and downstream uses.

BMP 14.17 (Bridge and Culvert Design and Installation) – Minimize adverse impacts on water quality, stream courses, and fisheries resources from the installation of bridges, culverts, or other stream crossings.

BMP 14.18 (Development and Rehabilitation of Gravel Sources and Quarries) – To minimize sediment from borrow pits, gravel sources, and quarries, and to limit channel disturbance from gravel sources permitted for development within floodplains.

BMP 14.19 (Disposal of Construction Slash and Stumps) – To ensure that debris generated during construction is prevented from obstructing channels or encroaching on stream, and sensitive karst features.

BMP 14.20 (Road Maintenance) – Maintain all roads in a manner which provides for soil and water resources protection by minimizing rutting, road prism failures, sidecasting, and blockage of drainage facilities.

BMP 14.22 (Access and Travel Management) – Control access and manage road use to reduce the risk of erosion and sedimentation from road surface disturbance especially during the higher risk periods associated with high runoff and spring thaw conditions.

BMP 14.24 (Road Obliteration) – Reduce sediment generated from temporary or short-term roads and return the land to production by obliterating roads at the completion of their intended use.

BMP 14.26 (Daily LTF Cleanup) – Assure cleanup of bark, debris, or other solid materials daily when accumulations are present. Dispose of the materials in an acceptable manner, to prevent water quality degradation.

BMP 14.27 (Log Storage/Sort Yard Erosion Control) – To avoid generation of fine particles, and control the overland flow of particles carrying hazardous materials into waterways.

Botany

Sensitive or rare plant populations located either within units or within 50 meters (164 feet) of the unit are noted on the unit cards. Unit cards also include actions taken to avoid or mitigate effects to populations and a summary of direct and indirect impacts on sensitive and rare plants. The plant species potentially affected by one or more unit and listed on the cards include:

Sensitive Plants

Alaska Rein Orchid	*Piperia unalascensis*
Lesser Round-leave Orchid	*Platanthera orbiculata*

Rare Plants

Western Meadowrue	*Thalictrum occidentale*
Lance Leaf Grapefern	*Botrychium lanceolatum*

Invasive Species

A number of specific plant populations along roads near or within specific units have been targeted for treatment (hand-pulling) and/or monitoring, based on their limited distribution in the project area, potential for spread, and feasibility for treatment. These populations are identified on specific unit or road? cards. Invasive species treatment information for the project area is found in the Invasive Plant Risk Assessment and the Invasive Species Resource Report in the project record.

Fisheries

All known streams are shown on the unit cards. These streams and any additional streams found during layout will be protected by the appropriate BMPs and Forest Plan Riparian Standards and Guidelines. Specific stream characteristics and related protections are summarized below. The type and level of stream protections and mitigation is based mainly on designated stream class and channel process group. Project-specific information (that has been field verified or obtained from the Forest Service geographic information system (GIS)) has been included for all streams in or adjacent to the units or crossed by proposed access roads. Additional field reconnaissance continued while completing the DEIS. Further field reconnaissance will be completed before the FEIS and will be included for units and related roads selected in the final EIS.

Riparian Management Areas

Forest Plan Standards and Guidelines direct the design of riparian management areas (RMAs) associated with each stream in the project area.

RMAs vary in width from the edge of the stream channel according to channel type (Table A1-1) and stream value class. All Class I and Class II streams are protected from commercial timber harvest within a minimum horizontal distance of 100 feet from the bankfull margins. Depending on the channel type, RMA widths can be up to 140 feet wide on either side of some Class I, Class II, and Class III streams. RMAs adjacent to Class III streams are protected from commercial timber harvest, except along palustrine channel types. RMA widths on Class III streams are topographically delineated along channel types with steep side-slopes and are measured to set distances along other channel types.

Unit card maps show the location of all streams and the associated RMAs. RMA widths for each Class I, Class II, and Class III streams are prescribed in the unit card narratives.

Unit card narratives also identify those streams that will require a RAW buffer review during implementation; the RAW buffer will be identified by the ID Team during layout. A grid system and a stream number is used to assist the reader in locating the stream. Where there is a windthrow and/or landslide rating, it is for the area adjacent to the stream.

Road crossings described on the unit cards are for temporary roads only. System road crossings are discussed on the road cards.

Process Groups and Channel Types

The Tongass National Forest defines stream channel types according to the Channel Type User Guide (Paustian et al.1992, Paustian and Kelliher 2010), the foundation upon which aquatic habitat management prescriptions are developed. Channel types are defined within the context of fluvial process groups that describe the interrelationship between watershed runoff, landform relief, geology, and glacial or tidal influences on fluvial erosion and deposition processes. Individual channel type classifications are defined by physical attributes such as channel gradient, channel width, channel pattern, stream bank incision and containment. Table A1-1 shows the Forest Plan codes used on the unit card narratives.

See the Forest Plan, Figure D-1 (page D-4) for a visual representation of the typical distribution of channel process groups. Each unit card summarizes the protection for a particular unit. Only the channel types found in proposed timber harvest units are listed.

Table A1-1. Channel Types In or Adjacent to Proposed Harvest Units

Process Group	Channel Type (C-Type) Code	Channel Type Description
Alluvial Fan	AFM	Moderate Gradient Alluvial Fan
	AFH	High Gradient Alluvial Cone
Floodplain	FPS	Small Flood Plain
	FPM	Medium Flood Plain
	FPL	Large Flood Plain
High Gradient Contained	HCLw	High Gradient Low Incision, wetland phase
	HCL	High Gradient Low Incision
	HCV	High Gradient Upper Valley
	HCDw	High Gradient Deep Incision, wetland phase
	HCM	High Gradient Moderate Incision
	HCD	High Gradient Deep Incision
Moderate Gradient Contained	MCS	Small Moderate Gradient Contained
	MCM	Medium Moderate Gradient Contained
	MCL	Large Moderate Gradient Contained
Moderate Gradient Mixed Control	MMS	Small Moderate Gradient Mixed Control
	MMM	Medium Moderate Gradient Mixed Control
Low Gradient Contained	LCS	Small Low Gradient Contained
	LCM	Medium Low Gradient Contained
Palustrine	PAS	Small Palustrine
	PAM	Medium Palustrine
	PAB	Beaver Dam/Pond

Stream Value Classes

The stream value class designations in the Tongass National Forest are based primarily on presence or absence of fish and fish type, and secondarily on stream morphology. The Forest Plan recognizes four stream classes based on the following criteria:

Class I: Streams and lakes with anadromous or adfluvial fish or fish habitat; or high quality resident fish waters, or habitat above fish migration barriers known to be reasonable enhancement opportunities for anadromous fish.

Class II: Streams and lakes with resident fish or fish habitat and generally steep (6-25 percent or higher) gradient (can also include streams with a 0-6 percent gradient) where no anadromous fish occur, and otherwise not meeting Class I criteria.

Class III: Streams are perennial and intermittent streams that have no fish populations or fish habitat, but have sufficient flow or sediment and debris transport to directly influence downstream water quality or fish habitat capability. For streams less than 30 percent gradient, special care is needed to determine if resident fish are present.

Class IV: Other intermittent, ephemeral, and small perennial channels with insufficient flow or sediment transport capabilities to have immediate influence on downstream water quality or fish habitat capability. Class IV streams do not have the characteristics of Class I, II, or III streams and have a bankfull width of at least 0.3 meter (1 foot).

Stream Protection and Mitigation Actions by Stream Category

The following protections and mitigations will be applied by stream category as defined in BMP 13.3 to all streams designated by each category by harvest unit.

Category A: These stream reaches are flagged with blue and white (B/W) candy striped flagging. Under the TTRA timber harvest shall not be within 100 feet of the stream channel and a Stream Course Protection Plan will be developed for that buffer. Additional AHMU buffers and selective harvest buffers may apply as specified in the specific Unit Card. Total no cut buffer is the sum of the no commercial and no programmed commercial harvest buffers.

Category B: These stream reaches are flagged with orange and white (O /W) candy striped flagging. Trees shall be felled in such a manner so that the direction of fall is away from the stream course. Trees or products shall not be hauled or yarded across the stream course unless fully suspended. Debris entering streams from harvest activities shall be removed. Additional AHMU buffers and selective harvest buffers may apply as specified in the specific Unit Card. Total no cut buffer equals the no programmed commercial harvest buffers.

Category C: These stream reaches are flagged with green and white (G /W) candy striped flagging. In so far as practicable, trees will be felled and yarded away from the stream course. Debris that enters the stream channel that may affect water quality or have potential for debris flows will be removed from the stream course.

Category A, B and C: All stream categories will implement BMPs 12.6, 12.6a, 13.9, 13.14, and 13.16. In addition to road crossings, for all units with shovel logging, equipment crossing of streams must comply with BMP 13.9 and 13.16.

Scenery

The potential effects of timber harvest upon scenery within the Big Thorne project area were mitigated by design criteria recommended by the project landscape architects. Retention to meet the Forest Plan scenery objectives using uneven-aged management or visual buffers has been identified for a number of units, as specified in the Scenery concerns box on the unit card narratives. As noted in the Even-aged Systems (Clearcut) section, these buffers would be reviewed for windfirmness and a RAW buffer used, if necessary. During implementation, any units which may exceed the Scenic Integrity Objectives would be reviewed by the landscape architect and modified if necessary. The allowable seen opening size specific to each unit is stated within each unit card narrative for units that have concerns.

The following Scenic Integrity Objectives (SIOs) from the Forest Plan provide standards for management based on the landscape's scenic characteristics and public viewing concern.

High SIO: "Design activities to not be visually evident to the casual observer" (Forest Plan, pg. 4-57). Activities may only repeat form, line, color and texture that are frequently found in the characteristic landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc. should not be evident.

Moderate SIO: Management and design activities will be subordinate to the landscape character of the area. Changes in the landscape may be evident to the casual observer but appear as natural occurrences when contrasted with the appearance of the surrounding landscape.

Low SIO: Management activities may visually dominate the characteristic landscape. Activities of vegetative and landform alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that visual characteristics are those of natural occurrences within the surrounding area or character type.

Very Low SIO: Management activities may dominate the characteristic landscape, yet when viewed as background, should appear to be a natural occurrence.

Heritage Resources

Individual unit card texts identify which units have heritage concerns. These units are not to be modified without consultation with Forest Service Heritage Resources.

Soils/Wetlands

Unit design and road locations are heavily influenced by the project area's soil resources. For instance, factors such as RMA buffers protect riparian soils and efforts to avoid slopes greater than 72 percent often determine the location of unit boundaries, temporary roads, and landings.

Factors that can influence unit design are areas designated as unsuitable for harvest due to very high landslide potential, colluvial activity, MMI4 soils, slopes steeper than 72 percent, and unstable drainages. Slopes greater than 72 percent that remain within units have been determined to be suitable for harvest with a minimum of partial suspension or

full suspension yarding. These factors that influence unit design and define whether slopes greater than 72 percent are suitable for harvest or not are addressed in the unit cards.

Temporary road crossing wetlands are noted in the unit cards. All road construction planned for this project is for silvicultural purposes and will be located and designed to meet 33 CFR 323 guidelines and State-approved BMPs.

Shovel yarding should follow BMPs 12.5, 13.2 and 13.9. Specifically, shovel operators should avoid non-forested areas to prevent rutting. Slopes over 25% gradient may not be suitable for shovel yarding under some soil moisture conditions. Use care when approving shovel yarding on slopes over 25% gradient. Avoid track slippage and rutting.

All units have a minimum of partial suspension required unless otherwise stated within the unit card text. Some units have areas where full suspension is required. Consult the unit card text for details on locations (BMP 13.9).

Wildlife

All units comply with required Forest Plan Wildlife Standards and Guidelines. Any nests/animals dens discovered at any time will receive the necessary standard and guideline applications. See the description of legacy forest structure and direction in the Silviculture section above.

Wolves: The Forest Plan requires 1,200-foot buffer applied to all known wolf den sites in the project area. Two known den site buffers overlapped three proposed harvest units; the portions of units overlapping the buffers were removed from the unit pool. Actual den locations and buffers are not displayed on unit cards maps at the request of ADF&G.

Black bears: The Forest Plan does not require buffers for black bear dens; however, in consultation with ADF&G for this project, to minimize den disturbance, a 300-foot buffer was applied to all known black bear den sites within the project area. Under all alternatives, portions of units overlapping the 300-foot black bear den site buffers were removed from the unit pool. Actual den locations and buffers are not displayed on unit card maps at the request of ADF&G.

Goshawks: The Forest Plan requires a 100-acre buffer on all active goshawk nests. The one unit in which a nest was located and an adjacent unit were eliminated from consideration under all alternatives by the buffer.

Sitka black-tailed deer: Uneven-aged harvest and commercial thinning will help maintain or enhance black-tailed deer habitat over the long-term. Reduction of habitat fragmentation is also an important component of maintaining deer habitat. Where practical, corridors are planned to facilitate movement of deer across the landscape. Some units were deferred in Alternative 4 in part to address this concern and to maintain areas of deer winter range.

Appendix C
ROAD CARD INTRODUCTION

Appendix C
Road Card Introduction

This introduction is provided to supplement the information given in each of the road cards in Volume VI. The road cards provide road management objectives for each National Forest System (NFS) road. A map accompanies each road card. Proposed new roads include a map for each alternative.

Road Management Objectives

Purpose and Use

The road management objectives (RMOs) presented in this appendix establish the intended purpose and display the design, maintenance, and operation criteria (per FSH 7709.55) for proposed roads within the Big Thorne project area. Site-specific design criteria are discussed in the second section of the RMOs; these will be used during design, construction, and initial monitoring of any road work proposed in this document. For proposed roads and roads proposed for reconstruction, a map is provided that shows the proposed road location and identification of areas discussed in the site-specific design criteria. Site-specific design criteria include road location objectives, wetland information, erosion control, and proposed rock borrow sources. Streams within the project area with proposed construction rehabilitation of stream crossing structures are shown on maps for existing roads.

General Design Criteria

The general design criteria provide various descriptions of the type of road and the intended purpose and future use of the road. Three Functional Classes are used by the Forest Service. They are: arterial, collector, and local. Arterial roads function as mainlines, with collectors feeding traffic to arterials, and locals feeding traffic to collectors. Service Life indicates duration of road use. Choices are Short-term (less than 10 years) or Long-term. Long-term is used in conjunction with the entry cycle. The choices are Long-term Constant or Long-term Intermittent. The roads on the island are listed as Long-term Intermittent (LI). Maintenance and operation criteria are developed from functional class, service life and other general design criteria.

Maintenance Criteria

The maintenance criteria include a discussion of how the road is to be maintained, centering on three strategies. The three maintenance strategies are:

Active: Provide frequent cleanout of ditches and catch basins to ensure controlled drainage. Control roadside brush to maintain sight distance. Grade as needed to maintain crown and running surface.

Stormproof: Provide water bars, rolling dips, out sloping, etc., to ensure controlled runoff until any needed maintenance can be performed on the primary drainage system. Control roadside brush to maintain passage.

Storage: The process/action of closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use.

Maintenance levels and traffic service levels are discussed in the Draft EIS, Chapter 3, Transportation section. The operational maintenance level is the current or planned condition and is the level during timber harvest. Objective maintenance level is the desired condition after harvest activities are completed.

The active maintenance strategy is applied to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. These roads are assigned Maintenance Level 3. The active maintenance strategy will also at times be applied to roads intended only for use by high-clearance vehicles, or Maintenance Level 2 roads. This will usually be the case when log haul is expected in the near future.

An intermediate maintenance strategy is to stormproof or stabilize the road by providing roadway features, such as drivable water bars, and out sloping to control runoff in case the primary drainage system of culverts and ditches is overwhelmed during a storm event. Each culvert will be evaluated as to where the water would go if the culvert were to fail to carry the high flow. A water bar or out slope at this location will minimize the potential of erosion of long stretches of ditch line or roadway. This is intended to be the primary maintenance strategy applied to roads assigned Maintenance Level 2.

Storage is intended to be the primary maintenance strategy on intermittent use roads during their closure cycle. Road storage is defined in FSH 5409.17 as the “the process/action of closing a road to vehicle traffic and placing it in a condition that requires minimum maintenance to protect the environment and preserve the facility for future use.” Maintenance Level 1, closure and basic custodial maintenance, is assigned. A storage category is assigned to each road segment.

Storage Category "A"

Future access needs within 5 to 10 years. Road is stable, with very little or no resources affected. Roads have minimal closure devices, typically have drivable waterbars, rolling dips, and nearly all existing drainage structures and bridges are retained. May be dual-designated motorized trail. Roads can be opened by permit, contract or for administrative use with very little work required. Monitor every 5-7 years and adjust maintenance as needed.

Storage Category "B"

Future access needs within 5 to 20 years. Most resource risks (stream diversion, slope failure) can be mitigated by site-specific measures that retain most drainage structures in place (e.g., dips by culverts, partial removal of deep fills over stream crossings, etc). May be dual-designated motorized trail if terrain is suitable and resource risk is low. Roads will require reconditioning work to be opened.

Storage Category "C"
Future access not needed in foreseeable future (20+ years), or road already needs major reconditioning to use road. Resource risks (stream diversion, slope failure) can not be mitigated by site-specific measures that retain most drainage structures in place. Functional cross-drains and Class IV drainage structures may be retained with dips. Non-functional structures are removed, unstable fills with resource risks and consequences from failure are treated. After storage, roads will require major reconditioning work to open.

Operation Criteria

The operation criteria include a presentation of each of the five traffic management strategies identified in FSM 7731 (encourage, accept, discourage, prohibit, and eliminate) to be applied to different traffic classes on each road. The traffic management narrative describes what actions will be taken in order to apply each strategy. For example, if the strategy “eliminate” is prescribed for standard passenger and high-clearance vehicles, the narrative describes the method to accomplish this, such as removal of stream crossing structures, gating, etc. Travel management strategies are discussed in greater detail in Chapter 3, Transportation.

Site-specific Design Criteria

The site-specific design criteria include road location objectives, wetland information, erosion control, proposed rock borrow sources, and all streams within the project area with proposed construction or rehabilitation of stream crossing structures. The road location discussion documents why the road is proposed in a specific location, control points, and alternative routes considered (if any). A main location objective is to avoid crossing wetlands. At times, however, it is necessary to cross wetlands in order to minimize the total impact of a road. These areas are discussed, documenting areas of mapped wetlands and why the road is located across these areas.

All fish streams are identified, as well as non-fish streams with sufficient flow to require a 48-inch or larger culvert. Prior to actual construction of roads and stream crossings, the final location, structure type, and design criteria are designed to meet all applicable Forest Plan Standards and Guidelines, Forest Service Manual and Handbooks, best management practices and MOUs with Alaska Department of Fish and Game (when applicable).

Operational and Objective Maintenance Levels

Operational Maintenance Levels indicate the level of road maintenance, Maintenance Level 2, during sale-related activities. Objective Maintenance Levels indicate the long-term maintenance plan for the roads as described in the following definitions. Maintenance Levels (MLs) discussed in the Road Management Objectives (RMOs) include Maintenance Levels 1 and 2. The definitions for maintenance levels are from the Forest Service Handbook 7709.58. The purpose of the ML is to define the level of service provided by, and maintenance required for, a specific road or segment.

Maintenance Level 1
Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed one year. Basic custodial maintenance is performed to

keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate." Roads are closed by barrier, bridge removal or organic encroachment and are monitored for resource protection.

Maintenance Level 2
Assigned to roads open for use by high-clearance vehicles. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either to (1) discourage or prohibit passenger cars or (2) accept or discourage high-clearance vehicles.

AFRPA Status

Alaska Forest Resources and Practices Act (AFRPA): Under this Act, all roads will be maintained as "Active" during harvest-related activities. After these activities are completed, the AFRPA classes on the road cards will be implemented. These classes include:

Active: A forest road actively used for hauling logs, pulpwood, chips, or other major forest products, or rock and other road-building materials.

Inactive: A forest road on which commercial hauling is discontinued for one or more logging seasons, and the forest landowner desires continuation of access for fire control, forest management activities, occasional or incidental use for forest products harvesting, or similar activities.

Closed: A road is closed when the following activities have been completed: a road is outsloped or waterbarred, or is left in a condition suitable to control erosion. The ditches are also left in a condition suitable to control erosion, and bridges, culverts, and fills are removed from surface waters.

Other Resource Information

The resource information section presents issues of concern (if any) for the following categories: timber/logging systems, wildlife, visual/recreation, cultural, lands/minerals/geology/karst, and soils/water. For proposed roads, potential concern exists for lines that pass through high-value deer habitat, medium- or high-vulnerability karst, or soils with a mass movement index ranking of 4 (MMI 4 soils). For existing roads, potential concern focuses on karst and soil issues.

Appendix D

CATALOG OF PAST HARVEST AND PRESENT AND REASONABLY FORESEEABLE PROJECTS

APPENDIX D – PART I
Catalog of Past Harvest in the Big Thorne Project Area

Timber harvest has been conducted in the Big Thorne project area for more than 70 years. However, industrial-scale logging activity began in the 1960s. This appendix provides a catalog of this past harvest and is stratified by Value Comparison Unit (VCU) and by harvest on National Forest System (NFS) lands versus state and private lands. Within each VCU and land ownership category, past harvest is listed by stand ID, year of stand origin, and acreage.

VCU 5720					
NFS Lands			**State/Private Lands**		
Stand Yr. Origin	**Stand ID**	**Acres**	**Stand Yr. Origin**	**Stand ID**	**Acres**
1970	5720200506	0.5	*None*		
1974	5720200507	0.7			
1992	5720202525	3.7			
		5.0			**0.0**
VCU 5740					
NFS Lands			**State/Private Lands**		
Stand Yr. Origin	**Stand ID**	**Acres**	**Stand Yr. Origin**	**Stand ID**	**Acres**
1971	5740200502	43.2	*None*		
1974	5740300068	157.4			
	5740300074	8.1			
	5740300502	194.3			
	5740300503	93.3			
	5740400504	55.7			
	5740400505	59.7			
	5740400506	9.9			
	5740400507	64.9			
1975	5740400501	53.9			
	5740400502	85.1			
	5740400503	33.4			
	5740400508	166.6			
1976	5740100501	61.6			
	5740100502	66.5			
	5740100503	63.5			
	5740100598	4.0			
	5740200504	12.6			
	5740200505	49.3			
	5740200506	70.2			
	5740200510	11.6			
	5740300501	69.5			
1977	5740100505	76.6			
	5740100506	63.6			
	5740200503	34.2			

VCU 5740 continued					
	5740200508	35.4			
1979	5740100507	88.6			
	5740100508	79.1			
	5740100509	65.9			
	5740102509	12.1			
1980	5740100504	22.2			
	5740200507	9.9			
1981	5740100510	73.0			
	5740100512	55.2			
1982	5740100511	14.9			
	5740100516	50.1			
	5740100520	13.3			
1983	5740100513	17.7			
	5740100515	21.5			
	5740200509	10.0			
	5740300504	74.0			
	5740300505	53.8			
	5740300508	84.1			
1987	5740200513	68.9			
	5740300506	81.7			
	5740300511	11.6			
1988	5740100514	27.9			
	5740100517	80.6			
	5740100518	25.9			
	5740200512	41.1			
	5740400511	67.8			
	5740400512	17.6			
1989	5740202516	14.6			
	5740300084	6.9			
	5740300509	27.3			
	5740400509	88.7			
	5740400513	72.7			
	5740400514	34.5			
	5740400523	51.3			
1990	5740200516	17.6			
	5740600501	21.1			
	5770300513	0.0			
1991	5740100521	27.8			
	5740200514	60.1			
	5740300510	23.8			
	5740400510	120.9			
	5740800501	6.0			
1992	5740400520	28.4			
1993	5740400521	61.5			
1994	5740100599	24.3			

VCU 5740 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
	5740109501	28.6			
	5740309411	65.9			
	5740309412	27.9			
2011	5770200030	0.3			
		3,622.6			**0.0**
VCU 5750					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1991	5750300501	21.7	*None*		
	5750300502	39.0			
	5750300503	20.6			
	5750300504	63.6			
	5750300505	28.4			
	5750300533	15.9			
	5750302501	13.1			
	5750302502	14.1			
	5750303501	8.9			
1992	5750200502	13.4			
	5750200507	1.0			
	5750300506	57.7			
	5750300507	20.2			
	5750300508	43.6			
	5750300509	1.1			
	5750302506	15.4			
	5750302508	23.8			
1999	5750200003	0.4			
		401.9			**0.0**
VCU 5760					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1989	5760300523	39.3	*None*		
	5760302523	2.3			
1990	5760100501	171.0			
	5760100502	81.7			
	5760100503	28.4			
1991	5760100504	28.6			
	5760100505	21.5			
	5760102504	41.0			
	5760102505	69.2			
	5760300501	61.8			
		544.9			**0.0**

VCU 5780					
NFS Lands			State/Private Lands		
Stand Yr. Origin	**Stand ID**	**Acres**	**Stand Yr. Origin**	**Stand ID**	**Acres**
1972	5780100505	149.7	*None*		
1974	5780100504	7.4			
1975	5780100503	12.1			
1977	5780100501	78.8			
1987	5780100506	200.5			
1988	5780100507	6.8			
	5780100508	11.6			
	5780100510	60.8			
	5780100511	155.5			
	5780100512	35.7			
1989	5780100513	121.5			
	5780100514	69.1			
1990	5780100509	60.8			
	5780100516	76.5			
	5780100517	75.3			
	5780100518	16.4			
	5780100519	16.0			
1991	5780100515	55.2			
	5780104501	7.0			
1992	5780100520	20.0			
2000	5780100093	14.9			
	5780100118	9.9			
2001	5780100117	82.4			
		1,344.0			**0.0**

VCU 5790					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1962	5790200516	18.7	*None*		
1963	5790200509	788.5			
	5790200579	15.8			
1966	5790100033	40.2			
	5790100042	26.4			
	5790100044	32.3			
	5790100045	21.5			
	5790100046	21.7			
	5790100504	263.1			
	5790200506	800.4			
1971	5790200507	316.3			
1972	5790100503	35.5			
	5790100505	25.7			
	5790200510	19.4			
	5790200513	9.2			
	5790200517	259.4			
1973	5790200511	84.7			
	5790200512	231.1			
1974	5790100501	30.8			
	5790100502	89.9			
1988	5780100508	0.4			
	5790100506	175.9			
1990	5790100515	10.5			
	5790100516	120.2			
1993	5790200520	103.7			
	5790201517	96.3			
	5790202517	91.0			
1995	5790109501	30.1			
	5790109502	43.8			
	5790109606	48.0			
	5790209501	49.6			
	5790209502	13.4			
	5790209503	29.5			
	5790209504	27.8			
	5790209505	19.4			
	5790209506	14.7			
	5790209601	19.2			
	5790209602	21.4			
	5790209603	16.9			
	5790209604	22.4			
	5790209605	55.0			

VCU 5790 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	**Stand ID**	**Acres**	**Stand Yr. Origin**	**Stand ID**	**Acres**
1996	5790200501	40.0			
	5790200503	35.3			
	5790200504	37.1			
1997	5790200007	15.7			
	5790200030	19.4			
		4,287.6			**0.0**
VCU 5800					
NFS Lands			State/Private Lands		
Stand Yr. Origin	**Stand ID**	**Acres**	**Stand Yr. Origin**	**Stand ID**	**Acres**
1974	5800100521	91.6	*None*		
	5800200510	100.0			
1975	5800200027	9.1			
	5800200512	89.1			
	5800200513	16.1			
	5800200514	83.4			
1976	5800100171	5.8			
	5800100172	83.2			
	5800100501	121.4			
	5800100503	35.1			
	5800100504	83.7			
	5800100505	119.0			
	5800100506	117.0			
	5800102506	10.8			
	5800200026	64.6			
	5800200029	3.8			
	5800200036	111.7			
	5800200511	96.9			
	5800200515	102.7			
	5800200530	28.7			
1977	5800100508	140.2			
	5800100509	52.2			
1979	5800100502	222.2			
1980	5800100507	24.9			
1986	5800100512	50.8			
	5800200516	101.9			
	5800200517	51.6			
1987	5800100511	35.7			
	5800100513	13.3			
	5800200520	18.5			
1988	5800100518	0.4			
	5800200518	7.9			
	5800200523	7.1			
	5800200531	9.5			

VCU 5800 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1990	5800200532	48.4			
	5800200533	50.9			
1992	5800200534	56.5			
	5800200535	30.5			
	5800201535	19.5			
1995	5800209501	22.8			
	5800209502	16.0			
	5800209503	6.2			
1996	5800200501	14.9			
1998	5800100006	28.2			
	5800100007	10.0			
	5800100008	4.2			
	5800100009	36.0			
	5800100017	31.1			
	5800100031	44.4			
	5800100041	31.8			
	5800100105	3.2			
1999	5800100109	65.2			
	5800100176	32.6			
	5800100180	46.3			
	5800100181	47.2			
2005	5800100178	4.8			
		2,760.7			**0.0**

VCU 5810					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1968	5810100508	37.2	*None*		
	5810100510	118.4			
	5810100511	155.0			
	5810100512	78.4			
	5810100521	116.7			
	5810300501	9.4			
1969	5810100005	20.6			
	5810100507	18.1			
	5810100513	8.4			
	5810100524	140.1			
	5810200003	133.4			
	5810200005	78.0			
	5810200006	46.5			
	5810200007	76.3			
	5810200008	231.2			
	5810200501	208.1			
	5810200502	252.5			
	5810200503	201.9			
	5810200504	207.7			
	5810300504	36.3			
	5810300530	39.9			
	5810400501	26.4			
	5810400504	81.1			
	5810400512	307.5			
	5810400513	91.4			
	5810400570	6.7			
	5810400571	32.6			
1970	5810100501	2.9			
	5810200505	98.9			
1971	5810200004	13.3			
	5810200506	114.8			
	5810200507	39.8			
	5810200508	53.0			
	5810300502	26.2			
	5810400001	6.7			
	5810400515	28.5			
1972	5810300503	14.2			
	5810300506	10.6			
	5810300508	56.5			
	5810400505	7.2			
	5810400507	30.4			
	5810400511	34.0			
	5810400514	34.1			

VCU 5810 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1973	5810300001	8.5	*None*		
	5810300505	196.0			
	5810300507	27.6			
	5810300509	9.9			
	5810300510	71.9			
	5810300512	41.2			
	5810400002	13.2			
	5810400503	65.8			
	5810400506	78.4			
	5810400508	85.2			
	5810400509	279.1			
	5810400510	200.6			
1974	5810100502	18.1			
	5810100504	60.7			
	5810300511	76.2			
1975	5810300513	73.1			
	5810300514	70.1			
1987	5810300516	117.2			
	5810300518	74.6			
	5810300533	36.7			
1988	5810300519	25.4			
	5810300532	58.8			
1989	5810100515	40.6			
	5810100516	185.2			
	5810100517	71.1			
	5810300531	125.4			
	5810400518	55.4			
	5810400520	51.1			
1990	5810100518	85.2			
1992	5810100525	32.1			
	5810100526	38.6			
	5810300520	75.8			
	5810300598	2.5			
	5810400521	52.5			
	5810400523	36.2			
1993	5810200572	37.9			
	5810200573	19.8			
1994	5810400522	88.8			

VCU 5810 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1995	5810109501	20.1			
	5810109502	32.9			
	5810209501	11.3			
	5810209502	14.7			
	5810209503	26.1			
	5810209504	17.7			
	5810300599	49.7			
	5810309503	7.8			
1996	5810200509	67.2			
	5810200556	19.3			
2004	5810200009	13.5			
2005	5810100006	23.6			
	5810100007	48.1			
	5810300005	23.8			
2006	5810100025	63.4			
	5810200082	49.8			
	5810200083	3.1			
	5810200084	65.8			
	5810200085	51.0			
2008	5810400003	70.9			
2010	5810100001	18.1			
	5810200001	12.8			
	5810200002	21.1			
		6,749.6			**0.0**
VCU 5820					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1969	5820100504	9.0	*None*		
		9.0			

VCU 5830					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1959	5830200567	543.8	*None*		
1960	5830200518	291.1			
	5830200551	321.5			
	5830200594	23.7			
	5830300569	75.5			
	5830300572	79.4			
	5830300578	66.5			
1963	5830200502	79.2			
	5830300558	25.7			
	5830300577	440.3			
1964	5830100529	60.9			
	5830100556	80.8			
	5830100559	12.4			
1965	5830100567	20.6			
	5830100568	116.5			
	5830100571	63.6			
	5830200569	5.8			
	5830200588	8.5			
	5830200590	1.5			
	5830200591	7.3			
	5830200593	5.6			
	5830300036	5.1			
	5830300040	10.8			
	5830300524	181.7			
1966	5830200582	2.2			
1971	5830100599	28.1			
1989	5830100513	22.7			
	5830100514	9.1			
	5830100516	96.6			
	5830100534	58.5			
	5830300503	19.0			
	5830300504	148.7			
1990	5830100530	69.7			
	5830100531	80.8			
	5830100536	41.1			
	5830100538	72.8			
1991	5830100519	6.8			
	5830100537	80.5			
1992	5830100515	17.7			
1993	5830100541	54.5			
1994	5830100540	19.2			
	5830100598	64.6			
	5830102540	16.1			

VCU 5830 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1995	5830209501	9.0			
	5830209502	35.8			
	5830209503	29.4			
	5830209504	53.7			
	5830209505	24.4			
	5830309501	43.7			
	5830309502	53.4			
	5830309503	28.1			
1999	5830200018	3.2			
2006	5830100512	2.2			
	5830200039	6.8			
		3,726.5			**0.0**
VCU 5840					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1964	5840100121	456.1	*None*		
	5840100122	16.5			
	5840100123	63.8			
	5840100510	332.0			
1965	5840100524	117.3			
1966	5840100504	17.1			
	5840100506	48.4			
	5840100526	29.1			
	5840200574	567.4			
	5840300023	413.1			
	5840300501	339.6			
	5840300519	207.6			
	5840300576	86.7			
1967	5840100518	9.7			
	5840100521	12.6			
1968	5840300521	73.9			
1969	5840200575	87.2			
1974	5840300577	37.9			
1992	5840200597	25.4			
	5840300592	48.4			
	5840300593	45.4			
	5840300594	83.4			
	5840300595	95.5			
	5840300596	67.4			

VCU 5840 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1993	5840100528	80.6			
	5840100529	52.8			
	5840100530	7.2			
	5840200577	20.6			
	5840200579	54.3			
	5840200583	68.1			
	5840200584	39.8			
	5840200585	22.6			
	5840201585	5.6			
1994	5840200582	36.1			
	5840201582	30.6			
1995	5840209501	9.9			
1997	5840100024	41.5			
	5840300019	29.2			
1998	5840100026	21.2			
	5840100027	45.5			
	5840200066	51.0			
	5840200074	25.4			
	5840200075	3.8			
	5840200085	31.2			
	5840200086	9.4			
1999	5840100069	25.9			
	5840100071	29.6			
	5840100106	92.6			
		4,116.4			**0.0**
VCU 5850					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1964	5850100502	232.2	*None*		
1965	5850100501	2,304.5			
	5850100506	12.7			
1966	5850100010	50.0			
	5850100511	87.6			
1969	5850100508	34.0			
1970	5850100073	5.3			
	5850100503	29.1			
	5850100505	10.9			
	5850100509	13.9			
	5850100512	36.6			
1973	5850100020	116.0			
	5850100504	806.6			
	5850100507	12.2			
1991	5850100537	85.8			

VCU 5850 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1992	5850100538	48.0			
1993	5850100539	61.4			
	5850100540	34.4			
	5850100542	153.7			
	5850100543	37.5			
	5850100544	59.7			
1995	5850109501	32.2			
	5850109502	25.6			
	5850109503	30.6			
	5850109504	21.9			
	5850109505	13.6			
	5850109506	26.8			
	5850109601	29.4			
	5850109602	18.8			
	5850109603	25.3			
	5850109604	4.3			
	5850109605	23.6			
		4,484.4			**0.0**
VCU 5860					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1950	5860200510	4.5	**1940**	5860200517	12.5
	5860200511	2.1	**1950**	5860200516	32.5
	5860300106	3.3		5860300107	0.6
	5860300107	0.2	**1957**	5860300513	27.4
1958	5860300506	17.2		5860300514	29.0
	5860302506	1.2	**1958**	5860300506	1.8
1960	5860200512	6.8		5860302506	232.0
1962	5860300501	13.7	**1961**	5860200504	42.5
	5860300504	411.9	**1962**	5860200505	10.2
	5860300505	2.8		5860300115	799.8
	5860302501	31.5		5860300501	242.6
	5860302504	0.7		5860300502	21.4
	5860303501	9.7		5860300503	107.0
1963	5860100079	90.4		5860300505	0.0
	5860100082	13.7		5860302504	91.2
	5860100501	649.0		5860302505	77.8
	5860100509	921.2	**1963**	5860100509	5.7
	5860102509	1.9		5860102509	206.8
	5860103509	13.9		5860103509	1.9
1966	5860100503	2.7		5860200048	38.5
	5860100507	5.0	**1964**	5860200506	14.2
	5860102503	1.2		5860200518	13.2

VCU 5860 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1967	5860200514	5.1	**1966**	5860102503	33.8
	5860200515	40.6	**1967**	5860300515	63.9
1969	5860100512	0.0	**1969**	5860100512	49.6
	5860200501	0.3		5860200501	36.9
	5860202501	2.0	**1970**	5860100514	17.5
1970	5860100510	34.4		5860200509	4.9
1972	5860100502	22.3	**1973**	5860100080	0.4
	5860100504	178.3		5860100506	0.0
1973	5860100080	18.0		5860100511	0.7
	5860100081	15.3		5860102511	12.1
	5860100506	69.5		5860103511	7.0
	5860100511	26.7		5860200503	244.0
	5860100513	104.1	**1988**	5860200519	122.4
	5860102511	0.3		5860300507	34.1
	5860200513	6.8		5860300508	63.5
1978	5860100505	36.4		5860300511	32.9
1989	5860300509	0.1		5860300512	14.1
	5860300510	19.6	**1989**	5860200523	92.0
	5860302509	10.4		5860300509	33.5
1995	5860109503	2.6		5860300516	4.5
	5860109504	0.2	**1990**	5860300517	35.4
	5860109507	9.1	**1997**	5860100006	0.0
1997	5860100006	55.7		5860300151	1.2
	5860300039	8.4	**2000**	(blank)	65.3
	5860300052	31.8	**2005**	5860300115	646.8
	5860300142	41.6	**No Year**	--	825.0
	5860300143	20.2			
	5860300144	19.1			
	5860300149	4.4			
	5860300150	0.3			
	5860300151	39.7			
	5860300152	45.8			
1999	5860100075	54.7			
	5860100076	57.0			
	5860100077	28.4			
	5860100078	13.5			
2005	5860300115	0.8			
2010	5860300540	1.1			
		3,229.3			**4,449.9**

VCU 5950					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1980	5950200192	0.7	**1980**	5950200192	414.4
1983	5950400511	1.7	**1983**	5950200518	12.0
1986	5950200501	32.3		5950200519	51.3
	5950200502	13.5		5950300517	3.4
	5950200503	4.7		5950400510	15.4
	5950200520	76.4		5950400511	246.6
	5950202501	0.0	**1986**	5950200501	0.4
	5950300520	60.6		5950202501	40.2
1987	5950300518	11.6	**1988**	5950200522	28.5
	5950300521	60.8		5950202522	0.7
	5950400512	122.4	**1989**	5950200147	1.2
	5950400513	35.2		5950200150	0.5
1988	5950202522	5.2		5950200521	21.6
	5950300519	79.4	**1990**	5950200045	20.0
1989	5950200147	11.7		5950200152	3.2
	5950200150	12.3		5950200153	10.3
	5950200521	0.0		5950200154	32.0
	5950200523	48.0		5950200155	34.6
	5950300522	72.4		5950200156	34.9
1990	5950200152	0.0		5950200157	17.0
	5950200153	1.5		5950200158	72.1
	5950200154	0.5		5950200159	28.9
	5950200155	2.8		5950200160	10.7
	5950200157	2.7		5950200161	23.6
	5950200159	2.4		5950200162	104.4
	5950200163	1.2		5950200163	17.3
	5950200164	2.0		5950200164	34.7
	5950300072	0.1		5950200165	4.1
	5950300523	146.5		5950200166	11.7
	5950300524	50.0		5950200167	22.5
	5950400108	0.5		5950200168	11.6
	5950400112	0.5		5950200169	21.4
	5950400113	0.5		5950200170	12.2
	5950400114	0.3		5950200171	9.9
	5950400115	1.1		5950200172	11.3
	5950400514	53.9		5950200173	7.3
	5950400515	50.8		5950200174	43.3
	5950400518	79.6		5950200175	2.3
	5950400519	45.5		5950200176	2.2
	5950402519	16.9		5950200177	11.4
	5950403519	1.8		5950200178	13.0
1991	5950100501	1.0		5950200179	8.2
	5950102501	10.3		5950200180	7.5
	5950103501	30.4		5950200181	121.1
	5950104501	5.8		5950200182	18.2
	5950105501	3.5		5950200183	1.6
	5950200524	78.3		5950200184	16.9

VCU 5950 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1991	5950200525	33.8		5950200185	17.0
	5950400516	58.8		5950200186	5.4
	5950400517	59.7		5950200187	32.5
	5950400520	41.0		5950200188	6.2
	5950400521	37.3		5950200189	5.0
1993	5950300077	3.3		5950200190	1.4
1995	5950200504	36.5		5950200191	19.5
	5950209601	34.2		5950200193	16.4
	5950300103	5.5		5950200194	18.2
	5950400122	1.9		5950200195	2.6
	5950400123	2.1		5950200196	90.1
1998	5950300025	5.1		5950200197	8.6
	5950300066	2.4		5950200198	18.4
1999	5950300067	4.1		5950200199	15.3
	5950300073	7.1		5950200200	15.3
	5950300074	6.4		5950200201	13.2
	5950400022	11.7		5950200202	15.4
	5950400116	14.5		5950200203	21.2
	5950400117	9.6		5950200204	62.2
2000	5950200023	0.7		5950200205	1.1
2001	5950300076	13.6		5950200206	3.6
2003	5950200117	11.8		5950200207	1.8
	5950200126	14.2		5950200208	38.0
	5950200134	22.3		5950200209	2.1
	5950200139	23.0		5950200210	5.7
	5950200222	55.3		5950200211	2.2
2004	5950200014	22.0		5950200212	26.9
	5950200225	28.3		5950200213	17.6
	5950200226	8.2		5950200214	7.4
	5950200227	1.0		5950200215	74.0
	5950200228	34.4		5950200216	44.0
	5950300080	39.1		5950200218	6.5
2005	5950200001	0.1		5950200219	8.1
	5950200101	1.1		5950200220	0.2
	5950200113	18.1		5950300072	2.4
	5950200114	2.5		5950400095	19.8
	5950200120	0.4		5950400096	0.7
	5950200138	5.5		5950400097	0.7
	5950200140	0.0		5950400098	3.1
	5950400119	9.9		5950400099	20.5
	5950400120	9.1		5950400100	0.6
	5950500003	45.0		5950400101	48.6
	5950500004	3.7		5950400102	5.4
	5950500005	0.7		5950400103	3.9
	5950500011	2.1		5950400104	1.0
	5950500012	23.1		5950400105	1.0
	5950500013	3.7		5950400106	0.5

VCU 5950 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
				5950400107	7.4
				5950400108	20.5
				5950400109	62.5
				5950400110	54.6
				5950400111	40.2
				5950400112	15.9
				5950400113	55.8
				5950400114	64.6
				5950400115	72.9
			1991	5950100501	18.4
				5950102501	10.4
			2000	5950200023	4.0
			2005	5950200001	3.4
				5950200113	0.0
				5950200114	0.0
				5950200120	0.8
				5950200121	5.7
				5950200138	61.8
				5950200140	14.4
			No Year	--	28.0
		2,013.5			**2,909.8**
VCU 5960					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1988	5960200501	18.5	**1988**	5960202501	0.4
	5960202501	0.9	**2005**	5960300084	18.0
1989	5960100501	10.0			
	5960102501	6.3			
	5960500501	40.3			
	5960500502	53.8			
1990	5960500505	35.2			
		165.0			**18.4**
VCU 5971					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1968	5971100501	4.2	*None*		
1972	5971100502	71.3			
1975	5971100503	13.3			
1988	5971100504	41.0			
	5971100505	81.1			
1989	5971100506	77.8			
1990	5971100507	7.1			
2000	5971100009	0.4			
	5971100020	4.0			
		300.3			**0.0**

VCU 5972					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1966	5972100046	79.6	**1962**	5972300501	126.0
	5972100093	98.4	**1989**	5972302504	3.8
	5972100503	10.4			
	5972100505	381.0			
	5972200502	62.3			
	5972200503	33.9			
	5972200504	9.4			
	5972400501	1,173.1			
1967	5972100502	34.2			
	5972100504	36.4			
1968	5972200501	11.3			
1987	5972100506	13.5			
1988	5972200506	86.3			
1989	5972200505	20.4			
	5972200507	22.2			
	5972200513	5.7			
	5972200519	28.6			
	5972200520	73.3			
	5972200521	45.4			
	5972200522	17.3			
	5972202505	7.4			
	5972300502	20.4			
	5972300504	12.0			
	5972300505	34.8			
	5972300506	29.3			
	5972300507	18.3			
	5972300508	38.4			
	5972300512	37.3			
	5972300513	35.0			
	5972302504	0.0			
	5972400506	51.8			
	5972400508	90.0			
	5972400509	76.7			
	5972400510	42.6			
	5972400511	94.2			
	5972400512	37.5			
	5972400513	66.9			
1991	5972300515	16.3			
	5972300516	23.3			
	5972300517	46.7			
	5972300521	28.5			
1992	5972100511	105.9			
	5972200517	46.5			
	5972200526	72.3			
	5972300514	78.8			
	5972300518	94.2			
	5972300519	15.9			
	5972300520	29.7			

VCU 5972 continued					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
	5972300522	2.8			
	5972400514	40.4			
	5972400515	68.5			
	5972400516	22.4			
	5972400522	14.5			
1993	5972100512	76.3			
	5972100513	65.7			
	5972200523	43.3			
	5972200577	16.2			
1994	5972300009	13.5			
2000	5972100042	9.0			
	5972200064	25.3			
2004	5972100095	13.7			
	5972100096	28.0			
	5972400119	18.9			
2005	5972100098	3.5			
	5972200076	193.4			
	5972200624	14.9			
	5972200625	3.5			
	5972200626	3.5			
	5972300173	8.8			
	5972300174	40.5			
	5972300175	14.8			
	5972300176	26.9			
	5972300177	1.6			
	5972400118	5.0			
	5972400120	28.4			
	5972400168	24.7			
2006	5972100105	9.8			
	5972100106	23.1			
2007	5972200623	13.6			
2008	5972100514	9.4			
2010	(blank)	14.2			
	5972200508	8.9			
		4,400.8			**129.8**
VCU 5980					
NFS Lands			State/Private Lands		
Stand Yr. Origin	Stand ID	Acres	Stand Yr. Origin	Stand ID	Acres
1997	5980100154	58.3	*None*		
		58.3			**0.0**

APPENDIX D – PART II

Present and Reasonably Foreseeable Projects used for Cumulative Effects Analysis

Project Name	NEPA Name	Decision Year	Project Description	Year Completed	Acres or Miles	Resource Analyses	Scale
Timber Management Projects							
Roadside Micro Timber Sales	Roadside EA	2003	Micro Timber Sales - sales are limited to down, dead, or dying trees or green trees cut for safety and usually only involve only a few trees per sale.	Ongoing	Assume 50 acres in project area for the reasonably foreseeable future	All resources	Project Area and Watershed
Free Use Timber Harvest	NA	NA	Up to 10,000 board feet per person per year. Individuals must submit a Free Use Permit Application to the Forest Service to allow Free Use timber harvest	Ongoing	Assume 10 acres in project area for the reasonably foreseeable future	All resources	Project Area and Watershed
Precommercial thinning (PCT) of young stands in project area	NA	NA	Up to approximately 12,300 acres are expected to need pre-commercial thinning (PCT) over the next 10 years	Ongoing	Up to 12,300 acres of PCT over 10 years	All resources	Project Area and Watershed
State Timber Harvest in Project Area	NA	2010	Timber harvest and road construction on state lands in project area	Ongoing	635 acres and 4 miles road construction	All resources	Project Area and Watershed
State Timber Harvest outside Project Area but in Biogeographic Province 14	NA	2010	Timber harvest and road construction on state lands outside Project Area but in Biogeographic Province 14	Ongoing	2,170 acres of old growth, 400 acres of older young growth, and 13.3 miles road construction	Deer TES Plants	Bio. Prov. 14

Project Name	NEPA Name	Decision Year	Project Description	Year Completed	Acres or Miles	Resource Analyses	Scale
Control Lake Project	Control Lake Timber Sales Project EIS	1998	Timber harvest and road construction project, mostly completed.	Ongoing	351 acres of timber harvest (partially in roadless areas) and 1.2 miles of road construction	All Resources	Project Area and Watershed
Chasina Project	Chasina Timber Sale Project EIS	1998	Timber harvest and road construction project, mostly completed	Ongoing	306 acres of timber harvest (in roadless area) and 4.5 miles of road construction	TES Plants	Bio. Prov. 14 and 18
Soda Nick Project	Soda Nick EA	2007	Timber harvest and road construction project	Ongoing	257 acres and 0.5 mile of road construction	Deer TES Plants	Bio.Prov. 14 and Bio.Prov. 14 and 18
Logjam Project	Logjam Timber Sale Project EIS	2009	Timber harvest and road construction project	Ongoing	73 MMBF of old-growth timber harvest from 3,422 acres by clearcut and partial harvest. Includes 5 miles of NFS road and 17 miles of temp. road construction and 3 miles reconstruction.	Deer TES Plants	Bio.Prov. 14 and Bio.Prov. 14 and 18
Other Projects							
Prince of Wales Island Access Travel Management Plan	Access Travel Management Plan EA – Prince of Wales & Surrounding Islands	2009	Plan identifies road storage, decommissioning, motorized trail development and other roadwork that will be implemented in the foreseeable future as funding is available	Ongoing	25 miles road storage plus other work	All Resources	Project Area and Watershed

Project Name	NEPA Name	Decision Year	Project Description	Year Completed	Acres or Miles	Resource Analyses	Scale
Road Maintenance and Reconditioning in Project Area	CE	Various	Maintenance and reconditioning of existing NFS roads is an ongoing process that occurs on a periodic basis.	Ongoing	Road maintenance	All Resources	Project Area and Watershed
Niblack Mineral Exploration	NA	NA	Exploration drilling using helicopter access	Ongoing	NA	TES Plants	Bio. Prov. 14 and 18
Bokan Mt. Mineral Exploration	NA	NA	Exploration drilling using helicopter access	Ongoing	NA	TES Plants	Bio. Prov. 14 and 18
Cobble Watershed Restoration Plan (2006)	NA	NA	Upland and riparian thinning (some has occurred primarily in the Ratz and Cobble Creek watersheds) and instream habitat improvements (some in Cobble Creek) Most of this work occurred in the middle to late 2000s.	Most of this work occurred in the middle to late 2000s.	Upland and riparian thinning and instream habitat improvements.	All Resources	Project Area and Watershed
Luck Creek/Eagle Creek Watershed Restoration Plan (2011)	NA	NA	High priority projects include five stream restoration projects, six road closures, and four riparian thinning projects. Also included are upland habitat improvements, road storage /decommissioning, and red pipe removal/replacements	2012-2015	Approximately 65 acres of riparian thinning and a landslide restoration project will occur in the Luck/Eagle watershed in 2012.	All Resources	Project Area and Watershed

Project Name	NEPA Name	Decision Year	Project Description	Year Completed	Acres or Miles	Resource Analyses	Scale
North Thorne River Watershed Restoration Plan (2011)	NA	NA	Riparian restoration/improvement and road storage/decommissioning opportunities in the North Thorne watershed.	Future	Highest priority actions include 84 acres of riparian thinning; 12.4 miles of road storm-proofing, storing, and decommissioning; restoring access to 3.5 miles of stream; and instream structure placement and channel restoration at three sites.	All Resources	Project Area and Watershed
Twelvemile Creek Restoration Projects	Twelvemile Creek Restoration EA	2012	A mixture of terrestrial and aquatic restoration and enhancement projects in the Twelvemile Creek watershed project area, including stream habitat improvements, timber stand area improvements, road and trail projects, and invasive species treatment.	Future	Up to 19 large wood instream structures, 530 acres of riparian and upland thinning, 5 miles of road decommissioning, removal or replacement of 12 culverts, ¼ mile of trail development, and invasive weed treatment.	Deer and TES Plants	Bio. Prov. 14 and Bio. Prov. 14 and 18
Outfitter Guide EA	Prince of Wales Outfitter and Guide Management Plan EA	2012	The management plan identifies the allocation of commercial recreational use on Prince of Wales Island or, in other words, the number of outfitter and guide permits for each area	2012	NA	Recreation	Project Area
Gravelly Creek Trail Extension	NA	NA	Gravelly Creek Trail extension of 0.5 mile from the Gravelly Creek Picnic Area to the Falls Creek Pull-off on the Thorne Bay Highway.	Future	0.5 mile trail extension	Recreation	Project Area

Project Name	NEPA Name	Decision Year	Project Description	Year Completed	Acres or Miles	Resource Analyses	Scale
Honker Divide Canoe Route Improvements	NA	NA	Improve portages along the canoe route by constructing boardwalk, step-and-run stairways, and by hardening some surfaces with gravel; construct a new shelter on Thorne Lake	Future	NA	Recreation	Project Area
Balls Lake Trail Improvements	NA	NA	Complete trail by hardening the natural tread sections with step and run stairways and gravel; replace bridges	Future	NA	Recreation	Project Area
Luck Lake Day Use Area Shelter	NA	NA	Construct shelter on Luck Lake near Eagle Creek.	Future	NA	Recreation	Project Area
Boy Scout Multi-use Trail Bridges	NA	NA	Install two new bridges along this stored road system to expand off-highway vehicle (OHV) use of the area by an additional 17 miles. The bridges would be placed on Lava Creek and Slide Creek.	Future	NA	Recreation	Project Area
Control Lake Cabin Dock	NA	NA	Reconstruct the small dock at the Control Lake Cabin.	Future	NA	Recreation	Project Area
Sal Creek Cabin Construction	NA	NA	Construct a new cabin on the beach near Sal Creek; reopen a small road, construct less than 0.5 mile of trail, and construct a young-growth cabin.	Future	NA	Recreation	Project Area